AIA File Number 30-J

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Anemostat
N.Y.C.

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MONTREAL 28, QUE.

1955 *Selection Manual No. 50*

ANEMOSTAT®

DRAFTLESS ASPIRATING

Air Diffusers

FOR CONVENTIONAL OR HIGH VELOCITY SYSTEMS

NO AIR CONDITIONING SYSTEM IS BETTER THAN ITS AIR DISTRIBUTION

AIA File Number 30-J

WALNUT 0326

M. P. TURNAU

AIR-CARE LTD.

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MONTREAL

No matter which *air conditioning system you use*

HIGH VELOCITY

OR CONVENTIONAL

when these are in sight
the installation is right

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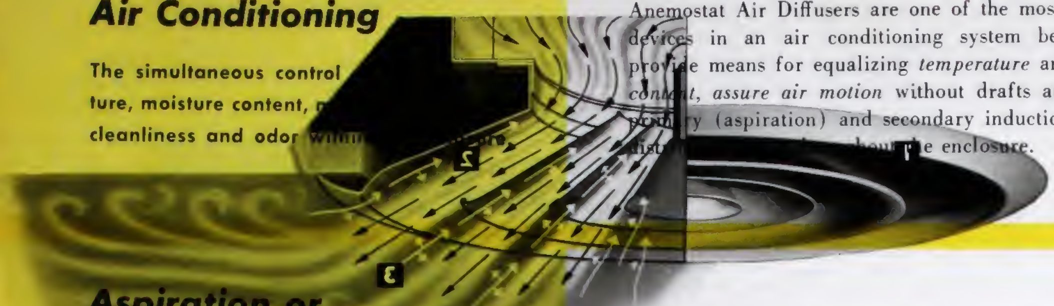
Why Anemostat Air Diffusers?

NO AIR CONDITIONING SYSTEM IS BETTER THAN ITS AIR DISTRIBUTION

Air Conditioning

The simultaneous control of temperature, moisture content, air motion, cleanliness and odor within an enclosure.



Anemostat Air Diffusers are one of the most important devices in an air conditioning system because they provide means for equalizing *temperature* and *moisture content, assure air motion* without drafts and by both primary (aspiration) and secondary induction properly distribute air throughout the enclosure.

Aspiration or Primary Induction

The induction of room air drawn into an outlet by the primary air stream.

Anemostat Air Diffusers are the only units which have both primary (aspiration) and secondary induction characteristics. Louvers, plaques and grilles, regardless of shape, can only have the secondary induction characteristics [illegible] air cannot be drawn into units of this type under any circumstances. The [illegible] construction of Anemostat Air Diffusers creates low pressure areas within the unit and [illegible]. The cumulative effect of both primary and secondary induction assures that superior mixing and distribution of air in the room will be obtained. Remember, only *Anemostat Air Diffusers Aspirate.*

Secondary Air Motion or External Induction

The induction of room air by the air discharged from the outlet.

Effective Temperature

An arbitrary index which combines into a single value the effect of temperature, humidity and air movement upon the sensation of warmth or cold felt by the human body.

Anemostat Air Diffusers correctly distribute the air, which has been processed psychrometrically by other equipment to properly maintain within an enclosure the comfort zone conditions. The Anemostat Air Diffuser assures:

1) proper air motion within predetermined limits and

2) equalization of air temperature and humidity (moisture content) by utilizing both primary (aspiration) and secondary induction to provide thorough mixing of the supply air with the room air.

The Comfort Zone

is the range of effective temperature under which a larger percentage of an entire group of people feel comfortable.

Diffuser

is an Outlet discharging supply air in various directions and planes, thereby effecting its mixture with the room air.

Why Anemostat Air Diffusers?

1. *Four or more cones split the air into multiple layers, thus entraining more room air.*

2. *Expanding cones create low pressure areas which cause aspiration — the drawing in and mixing of room and supply air within the diffuser.*

3. *The two prime causes of drafts, velocity and temperature differentials, are reduced by aspiration right at the diffuser.*

4. *Aspiration also creates turbulent layers of rolling air which dissipate air motion energy and increase the mixing action.*

Aspiration + Entrainment = True draftless comfort in every corner of the room

Air Distribution Definitions

Air Conditioning

The simultaneous control of the temperature, moisture content, motion, distribution, cleanliness and odor within an enclosure.

Anemostat Air Diffusers are one of the most important devices in an air conditioning system because they provide means for equalizing *temperature* and *moisture content, assure air motion* without drafts and by both primary (aspiration) and secondary induction properly distribute the air throughout the enclosure.

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The induction of room air drawn into an outlet by the primary air stream.

Secondary Air Motion or External Induction

The induction of room air by the air stream discharged from the outlet.

Anemostat Air Diffusers are the only units which have both primary (aspiration) and secondary induction characteristics. Louvers, plaques and grilles, regardless of shape, can only have the secondary induction characteristics because they operate on jet principles, and room air cannot be drawn into units of this type under any circumstances. The expanding cone construction of Anemostat Air Diffusers creates low pressure areas within the unit and assures internal induction (aspiration). The cumulative effect of both primary and secondary induction assures that superior mixing and distribution of air in the room will be obtained. Remember, only *Anemostat Air Diffusers Aspirate.*

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An arbitrary index which combines into a single value the effect of temperature, humidity and air movement or the sensation of warmth or cold felt by the human body.

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1) the proper air motion within predetermined limits and

2) equalization of air temperature and humidity (moisture content) by utilizing both primary (aspiration) and secondary induction to provide thorough mixing of the supply air with the room air.

How to Select Anemostat Air Diffusers

1. REQUIRED AIR VOLUME

To obtain the total required air volume, refer to the current ASHVE Guide and proceed as outlined in Chapters "Heating Load" or "Cooling Load." The calculated air quantity should be checked to assure conformity with minimum ventilation requirements. (See Local Codes).

Modern design trends, founded on practice and research, are towards high rates of air changes with air motion in the occupied zone substantially below 50 fpm velocity for mechanical cooling. For evaporative cooling, velocities of 100 fpm or more may be found desirable.

The patented aspiration and diffusion characteristics of Anemostat Air Diffusers enable them to provide draftless air distribution within the breathing zone at rates up to 60 air changes per hour.

2. LOCATION AND NUMBER OF DIFFUSERS

For ceiling type Anemostat Air Diffusers, divide the ceiling area as nearly as possible into squares, the sides of which should not exceed three times the ceiling height.

When the ceiling area cannot be divided into squares, divide it into rectangles: the long side of such a rectangle should not exceed 1½ times the short side.

The Anemostat Air Diffusers are then located in the center of these square or rectangular areas. When this is not possible, the distance from the Anemostat Air Diffuser center to one side of the square or rectangle should not exceed 1½ times the distance to the other side.

For wall type Anemostat Air Diffusers, divide the enclosure into rectangles, the sides of which are in approximate ratio of 1½ to 1 in length. Locate a Type W Anemostat Air Diffuser in the center of one of the long wall sides of the rectangle, at least 1 ft. below the ceiling. Wherever it cannot be located in this manner it may be installed off center, as long as the distance to the nearest wall is not less than the minimum radius of diffusion as given in the Performance Data Table. The type W-13 Anemostat Air Diffuser must be installed in the ceiling with its straight edge parallel to and a minimum of 6 inches from the wall. Follow the same location procedure as for side wall installation.

If the supply air volume is to be distributed uniformly throughout the enclosure, then the air quantity handled by each Anemostat Air Diffuser is obtained by dividing the total air quantity by the number of squares or rectangles.

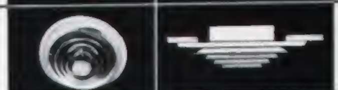
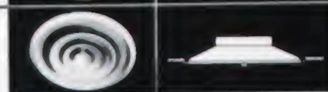
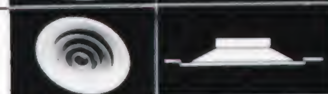
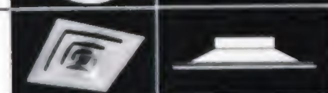
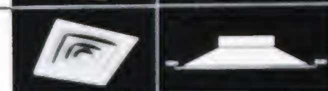
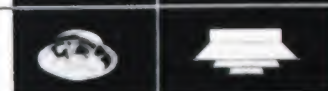
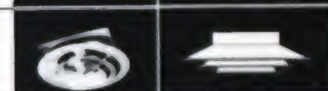
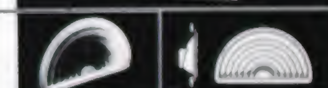
3. SELECTION PROCEDURE

After the supply air volume in cfm has been determined for each diffuser, then refer to the table on Page 7 to determine the maximum allowable noise level.

Refer to the selection guide (opposite) in which the basic appearance of each type of diffuser is shown, along with the characteristics of performance. Check the design air change rate with those shown and using the maximum permissible neck velocity (depending upon maximum permissible noise level shown on Page 7), select the proper diffuser type.

Because of the Anemostat complete line, it is possible to select one which will meet all functional and appearance requirements of any type of installation.

(Continued on page 6)

TYPE		SIZES AVAILABLE
AC		15-60
AR-3		15-95
C-2		12.5-95
CM-1		10-75
E		10-30
E-1		10-45
HU-3		25-75
HU-4		25-75
NL-1		15-40
SL		2 to 6 ft.
SLW		6½x18
W		5-40
HV	FOR APPLICATION DATA REFER TO PAGE 45	

IMPORTANT:

RECOMMENDED AIR CHANGES ARE BASED ON ROOM AIR MOTION OF 15 to 50 fpm. 15 fpm AIR MOTION CORRESPONDS WITH LOWEST AIR CHANGE INDICATED, 50 fpm WITH HIGHEST AIR CHANGE RATE. HIGHER VELOCITIES THAN 50 fpm ARE GENERALLY NOT ACCEPTABLE FOR MECHANICAL COOLING INSTALLATIONS. AIR MOTION FOR VENTILATING AND EVAPORATIVE COOLING IS ESTABLISHED AT 100 fpm FOR HIGHEST AIR CHANGE RATE SHOWN.

RECOMMENDED APPLICATION AND RANGE OF AIR CHANGES PER HOUR					MAY BE COMBINED WITH			REMARKS
With INSTALLATION	For HEATING	For COOLING with MECHANICAL REFRIGERATION	For VENTILATING & EVAPORATIVE COOLING	For REFRIGERATED SPACES	PROJECTION HEATING	PENDENT LIGHT FIXTURE	PROJECTION UNIT HEATER	
Flush to ceiling	4-18 Used with direct radiation 4-20	4-15	4-22	Consult local sales engineer	Not applicable	Yes	No	Supply and extract type used extensively in office buildings and public spaces.
On exposed ductwork		4-18	5-24	Consult local sales engineer	Not applicable			
Flush to ceiling	6-40	8-50	10-90	10-90	Not applicable	Yes	No	Especially useful for high rates of air changes and large cooling temperature differentials.
On exposed ductwork	8-50	10-75	10-120	10-120	Not applicable			
Flush to ceiling	4-24	4-21	4-26	Consult local sales engineer	Yes	Yes	Yes	Permits easy adjustment of airflow pattern for all conditions and requirements.
On exposed ductwork	5-30	5-24	5-36	Consult local sales engineer				
Flush to ceiling	3-15	3-12	3-20	Not recommended	Not applicable	Consult local sales engineer	No	For general usage flush type.
On exposed ductwork	3-15	4-14	4-22	Not recommended	Not applicable			
Flush to ceiling	4-14	4-14	6-22	Not recommended	Not applicable	Consult local sales engineer	No	Square unit fitting into perforated metal type acoustical ceilings, flush type.
On exposed ductwork	Not recommended	Not recommended	Not recommended	Not recommended	Not applicable			
Flush to ceiling	4-14	4-14	6-22	Not recommended	Not applicable	Consult local sales engineer	No	Square unit for all types of ceilings and exposed ductwork installations.
On exposed ductwork	4-18	4-16	8-30	Not recommended	Not applicable			
On projection unit heaters only	—	Not recommended	Not recommended	Not recommended	No	No	Yes	Recommended with projection unit heaters for mounting heights over 15 ft.
	—	Not recommended	Not recommended	Not recommended				
Flush to ceiling	6-30	4-10 Limited cooling	10-50	Not recommended	Yes	Consult local sales engineer	Yes	Recommended with projection unit heaters for mounting heights below 15 ft. or on ductwork for heating, ventilating and limited cooling with DE-2 in neck.
On exposed ductwork	8-40	Temp. differential 4-10	12-75	Not recommended				
Flush to ceiling	4-18	4-16	4-24	Not recommended	Not applicable	No addn'l light fixture	No	Combination air diffuser and direct light fixture.
On exposed ductwork	Not recommended	Not recommended	Not recommended	Not recommended	Not applicable			
Flush to ceiling or soffit and on wall	4-18	4-14	4-20	Consult local sales engineer	Not applicable	No	No	Ideal for combining air diffuser with strip lighting fixture. Cannot be used on bottom of exposed duct.
Flush to wall or side of duct	6-22	6-20	6-25	Not recommended	No	No	No	Single side wall units cannot be used in ceiling or on bottom of exposed ducting or soffit.
Flush to wall or ceiling	4-20	4-18	8-40	Consult local sales engineer	Consult local sales engineer	No	No	An excellent side wall type Anemostat Air Diffuser. For ceiling installations use Type W-13. Cannot be used on bottom of exposed duct.
On exposed ductwork	4-24	4-20	10-50	Consult local sales engineer	Consult local sales engineer			

4. DIFFUSER SIZE AND ACCESSORIES

As soon as the type diffuser as well as the quantity of air to be handled is known, and with the maximum permissible noise level (Page 7) is known, then refer to the Performance Data Sheet for the particular outlet. Follow down the stepped sharp black line indicating maximum permissible noise level until it intersects approximately the design capacity in cfm. Read across horizontally to the left for the size of diffuser and neck diameter. Read vertically upwards for the neck velocity. In the square beside capacity is the static resistance of the outlet, plus the maximum and minimum radius of diffusion.

For volume control, use the Anemostat Combo Units as required. For best performance of the diffuser on critical problems specify a second equalizing Deflector (ED), which should be set in the neck of the diffuser with the blade positioned 90° different from the blades of the Combo Unit. If remote volume control is used, then be sure to incorporate an ED in the neck for both directional control and equalization of air flow.

Consult the Accessory Selection Guide on Page 34 for the correct directional and volume controls of other accessories to be used in combination with the selected Anemostat Air Diffuser type.

NOTE

Above selection procedure is partly modified when Types HU-3, HU-4, or C-2 Anemostat Air Diffusers are to be used for purposes of projection heating. In such cases complete selection instructions are found in the sections dealing with these diffuser types.

Example

Problem—A department store, 120′ x 60′ x 12′ is to be supplied with 15,000 cfm of air for both heating and cooling. Air diffusers are to be of the circular flush type. Divide the space into squares keeping in mind the ratio of three to one, or space to be covered by the ceiling height or mounting height of the outlet. There will be eight (8) squares of 30′ x 30′ x 12′, each to be served by one diffuser handling 1875 cfm.

Refer to Page 7 and for department stores, a maximum permissible noise level is found to be 50-54 db.

The air change rate is: $\dfrac{15{,}000 \times 60}{120 \times 60 \times 12} = 10$ air changes per hour.

From the Selection Guide on Page 5, it is observed that the CM-1 will handle this rate of air change.

Turn to page 19 and read down the stepped sharp black line of 50 db until it intersects approximately the design cfm or the size 45 CM-1. Read vertically upwards and by interpolation the neck velocity is 1040 fpm. Similarly by interpolation, the resistance is 0.19″ H_2O and the radius of diffusion is 15-32 or exactly correct for this job. Thus the customer gets the best possible job for his money.

RADIUS OF DIFFUSION

Anemostat Air Diffusers do not throw air—they diffuse air in a hemispheric pattern. Therefore all technical tables describing diffuser performance show maximum and minimum radii of diffusion measured from a common center—the diffuser. For each capacity the maximum radius of diffusion determines the area of a zone of occupancy in which there will be draftless diffusion.

Anemostats, because they are built of cones of diverging angles, inject into the space a multiplicity of blankets of air and produce "three dimensional diffusion." Within the maximum radius of diffusion, an average air velocity of 20 to 35 feet per minute is created in the zone of occupancy to assure draftless diffusion.

The minimum radius of diffusion is important because it determines the area inside of which obstacles such as a partition or column will cause drafts in the zone of occupancy unless baffles or double equalizing deflectors are used to divert a portion of the air. When a diffuser is selected to operate at or near the minimum radius of diffusion, the rate of air change is relatively high and air motion in the zone of occupancy to within 6 inches of any wall or partition will be between 25 and 50 fpm which is within the acceptable standards for draftless air distribution.

When two or more diffusers are placed in a room, do not allow the areas as determined by the minimum radius of diffusion to intercept unless baffles or double equalizing deflectors are used. If these rules are followed, excessive air motion will be prevented. High energy air streams should not be allowed to collide with themselves or to strike a partition and roll down it into the zone of occupancy.

Radii of diffusion values are for ceiling mounted diffusers. For exposed mounting, radii of diffusion values may be decreased 10% for each 2 feet of distance between the bottom of the diffuser and the ceiling slab, but the total decrease shall not exceed 30%.

As the mounting height has a very important influence on the performance of diffusers, it is obvious that minimum radius of diffusion can be decreased as the ceiling height is increased over the base of 9′. Tests show it can be decreased one foot for each additional foot of ceiling height. However, regardless of ceiling height, do not decrease the radius of diffusion more than 50% of that shown in the tables.

The more important other variables which influence the performance of air diffusers are hot or cold temperature differentials, ceiling construction, open duct work, rate of air change and air approach to the diffuser as determined by the proper use of accessories, (equalizing deflectors and dampers).

Anemostat produces many different types of units to meet the problems caused by these important variables. Consult the tables on pages 4 thru 7 to select the proper air diffuser which will provide the correct air distribution and will also suit the ceiling designs. For efficient handling of high air changes and/or high temperature differentials, the performance of Anemostat AR-3 type diffuser has never been equalled.

Remember: If you are designing for comfort,
1. **Diffuse air—don't throw it!**
2. **Don't be concerned by terminal velocities at the ceiling. Comfort is determined by the air motion in the zone of occupancy.**

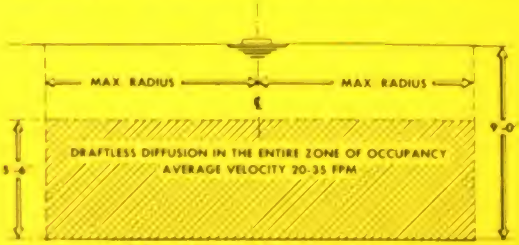


FIG 1—MAXIMUM RADIUS OF DIFFUSION

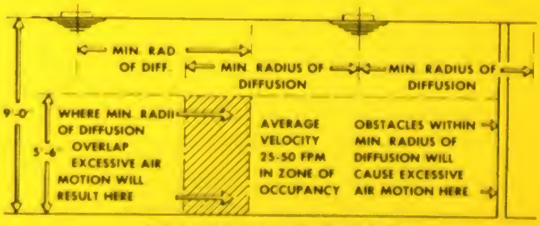


FIG 2—MINIMUM RADIUS OF DIFFUSION

REMEMBER FOR HIGHER CEILINGS—THE MINIMUM RADIUS CAN BE REDUCED ONE FOOT PER FOOT OF CEILING HEIGHT OVER 9′-0″.

How to Select Sound Levels

THE SOUND LEVEL METHOD OF DIFFUSER SELECTION

Air diffusers or attenuator-diffuser units can be selected to satisfy the sound levels selected by the engineer as the design criteria for the various types of occupancy which are to be served by the air conditioning system.

The important factors, which affect or influence the noise level at a particular diffuser, are the mass of air which flows through the unit and its velocity. Other factors are the mounting height of the unit, the sound absorption characteristics of the room, the noise in the duct serving the unit and the diffuser accessories, especially the damper used to control the capacity of the diffuser.

In air conditioning design the sound levels for reference are based on the "A" or 40 db weighted scale of a Standard Sound Level Meter. All decibel values, which are given in this manual, are based on this scale, which closely simulates the response of the human ear to sounds of different pitch. The sound levels shown are actually measured values from units tested under operating conditions in rooms which have ordinary sound absorption qualities. For this reason "up to 30 db" is shown as the lowest range. Ordinary Sound Level Meters do not measure sound with an intensity of less than approximately 23 db. When sound levels are shown in the 0-20 db range the practical engineer should question the data because the sound intensity of the breathing of the man reading the meter would bounce the needle of the instrument in the "below 20 db range".

The logical procedure is to select diffuser *at the intensity* of or *a couple of decibels less* than the intensity prevalent or desired in the space to be served. The resultant increase in the sound level in the space will then be practically imperceptible. The engineer is cautioned in the interest of economy of design to follow this recommendation closely and should not be too conservative and select for example 40 db diffusers or attenuator-diffuser combinations for a department store when the ambient background is over 50 db. This would merely add expense to the contract and would not improve the performance of the system.

The decibel scale is a logarithmic function and db values, of course, cannot be added directly. The values to be added must be reverted back to the actual intensities added and then converted back to the decibel values. For example, in space with a background sound level of 42 db (a private office) the use of a diffuser selected at 40 db will produce a combined noise level of 44 db. This logarithmic result can be verified using the conversion table as follows. The intensity of 42 db is 16,000 units and of 40 db is 10,000, which add to 26,000 units and count to 44 db.

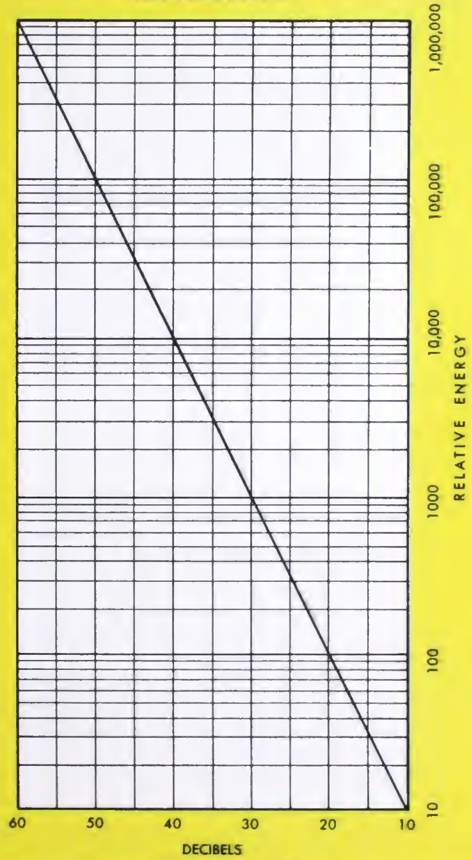
THE SOUND ABSORPTION CHARACTERISTICS OF ROOMS

The db values in this manual are the results of actual tests in rooms of fairly low absorption qualities. When the diffusing units are used in rooms of high sound absorbing characteristics due to carpeted floors, acoustic ceilings and draperies, the noise level will be lower than the values shown. On page 923 of the 1954 ASHVE GUIDE is a chart which shows the correction factors, which can be applied for an increase or decrease in the absorption characteristics of a room. Since the maximum deduction is less than 2 db, this correction is generally overlooked in the interest of conservative diffuser selection because of the predominance of the direct sound which is heard by the listener standing directly under or in front of the air distribution outlet.

DECIBEL LEVELS OF COMMON SOUNDS FOR OCCUPIED SPACES

	DECIBELS "A" SCALE	
VERY FAINT	0–20	Threshold of Audibility Soundproof Room Whisper Rustle of Leaves
FAINT	20–40	Quiet Conversation Sound & Recording Studios Television & Radio Studios Planetariums Quiet Home in Country Courtrooms—Churches Libraries—Museums—Art Galleries Hospital, Sick & Operating Rooms Private Offices, Acoustically Treated
MODERATE	40–60	Theatres—Auditoriums—Concert Halls Hotel Bedrooms Apartments and Residences Classrooms Private Offices, Acoustically Untreated Department Stores, Upper Floors Banking Rooms & Small Stores Restaurants & Hotel Dining Rooms Public Buildings Department Stores, Main Floor General Offices Factories, Assembly Lines Post Offices Dance Halls
LOUD	60–80	Average Factory Kitchen Engine Room Noisy Office Machine Shop Noisy Factory Boiler Factory

DECIBELS—RELATIVE ENERGY CONVERSION CHART



When designing an air conditioning system under 30 db, the engineer is advised to consult the sales engineering department of the Anemostat Corporation as other factors such as duct dampers, volume control and equipment noises severely influence the final noise level of the system.

Static Pressure Factors—Duct Takeoffs

The duct pressures at the takeoffs are of great importance especially at or near the end of the main duct run. These represent a pressure which the fan must create to assure the correct flow from the diffusers. A very common error is made when designers add to the duct friction only the pressure drop through the diffusers, to determine the pressure of the distribution system.

Actually the loss through the takeoff may be more than that of the diffuser and must be added into the summation of pressures. Another common error is using the last outlet on the line to determine the total pressure. Referring to the charts, you will note the takeoff on the duct run requires a higher duct pressure than the end of run unit as the change of air flow is a more complex operation.

As air is turned from a duct into a takeoff a complex orifice flow is obtained which always represents a pressure loss. This loss can also be substantially reduced by a splitter damper which also acts as a long turning vane extending into the duct.

The pressure losses are influenced by many variables. Most important are the velocities in both the duct and the takeoff, the size of the takeoff, and, of course, the accessories provided to control the pattern of air flow.

From actual test data, the easy to use tables on these pages have been prepared to show the pressure conditions which prevail for the most used types of takeoffs used in practical duct designs. If the tables are used in the manner illustrated by the example at the bottom of this page, the correct pressures can be determined in the duct at the takeoff for any standard condition and the particular type of diffuser selected to distribute the air.

Study this: The performance of all diffusers is a function of how the air approaches them. The air should approach the diffuser *evenly* to assure positive flow over all cones and obtain true circular diffusion. This also guarantees the minimum sound level as high velocity segments of flow are eliminated.

NOW—if you study these tables, you will observe that the turning vanes (equalizing deflectors) which assure correct diffuser performance also reduce the pressure loss at the takeoff and save fan horsepower. Use the proper accessories. They accomplish *two* objectives—both good.

The splitter damper also serves another purpose. If the duct pressure exceeds the value of the takeoff loss plus the loss of the diffuser selected, it can be throttled to effect additional pressure loss to nullify the excess pressure in the duct. This operation (balancing) assures that the correct pressure is then imposed on the diffuser to obtain the designed capacity.

TYPICAL EXAMPLE:

1. Determine from an analysis of the actual duct design which figures 1, 2 or 3 apply.

Assuming our example comes under figure 1, proceed as follows:

Determine the required Static Pressure at end of duct run in a 16" x 10" (approximately equal to take-off area) Duct where a size 37.5 Type AR-3 Anemostat Air Diffuser is installed.

The required capacity is 1470 cfm at 1200 fpm Neck Velocity. Diffuser to be equipped with CU (E.D. & DAMPER).

Solution:

(a) Total required s.p. = Diffuser s.p. (Performance Data Type AR-3) + Duct s.p. (From Graph in Fig. 1).

(b) Diffuser s.p. = .049 in. wg.

(c) On chart (Fig. 1 — Duct End Condition) enter graph at 1200 fpm Neck Velocity and follow line up until it intersects curve for sizes 25 through 37.5. Proceed horizontally at this intersection and read .143 in wg. Duct s.p.

(d) (Recapitulation) Diffuser s.p. = .049"
Duct s.p. = .143"
Total s.p. Required in Duct = .192" wg.

The procedure described above could be applied in a similar manner to a Duct Run Condition (Figure 2) and Plenum Supply Duct Condition (Figure 3).

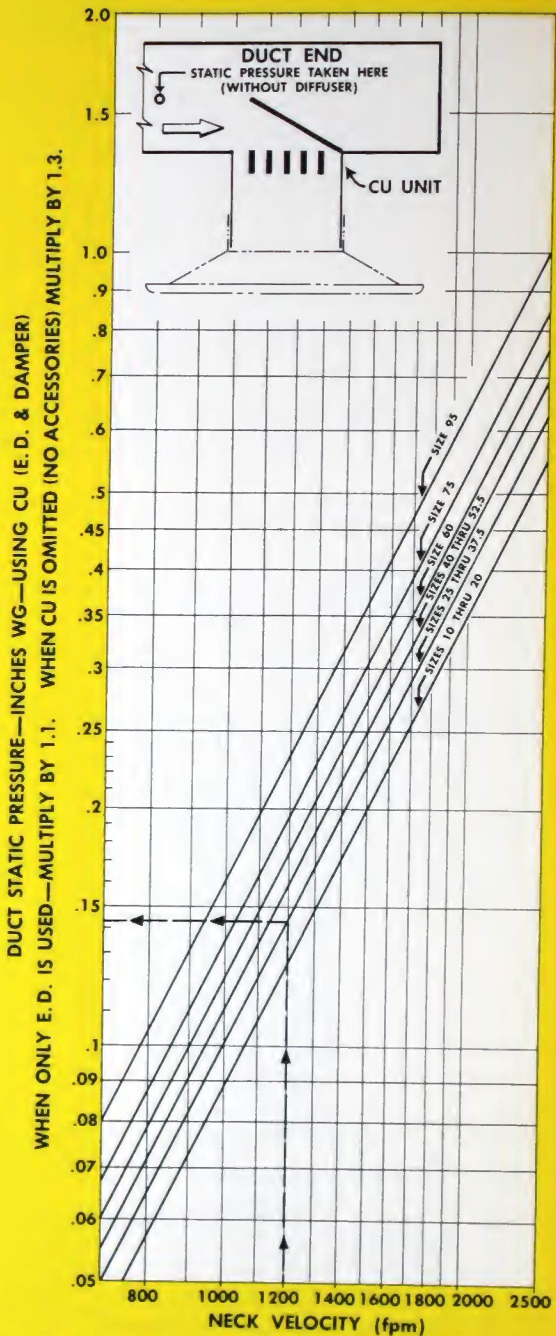


Fig. 1—End of duct run—where duct area is approximately equal to take-off area.

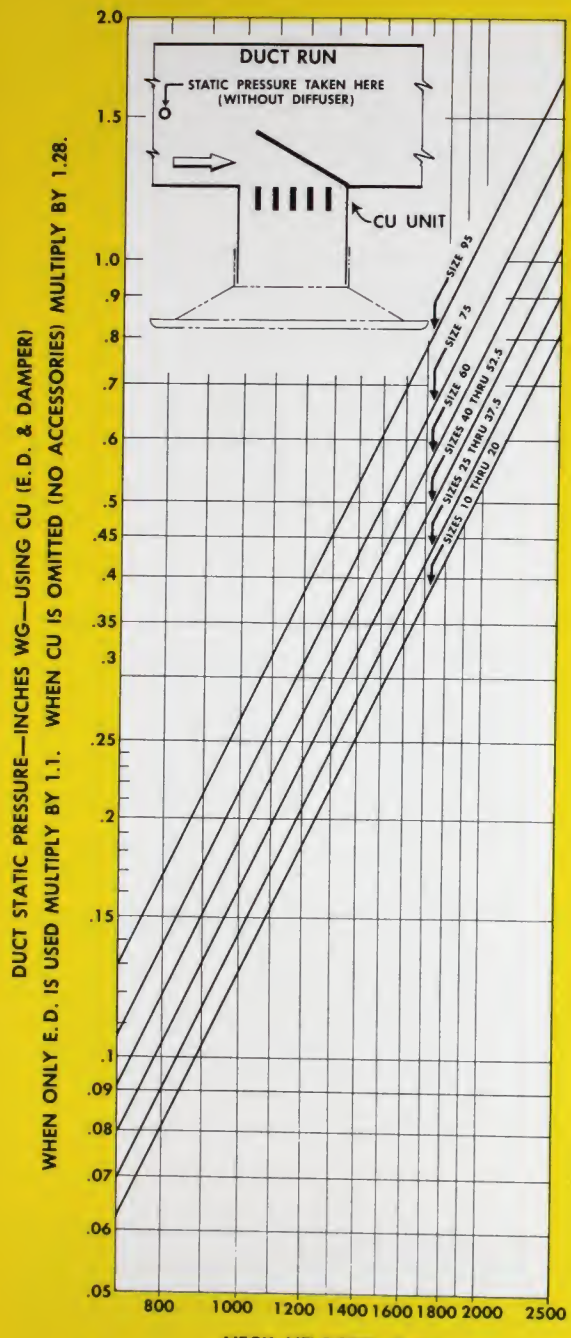


Fig. 2—Duct run—where duct area is at least twice the take-off area.

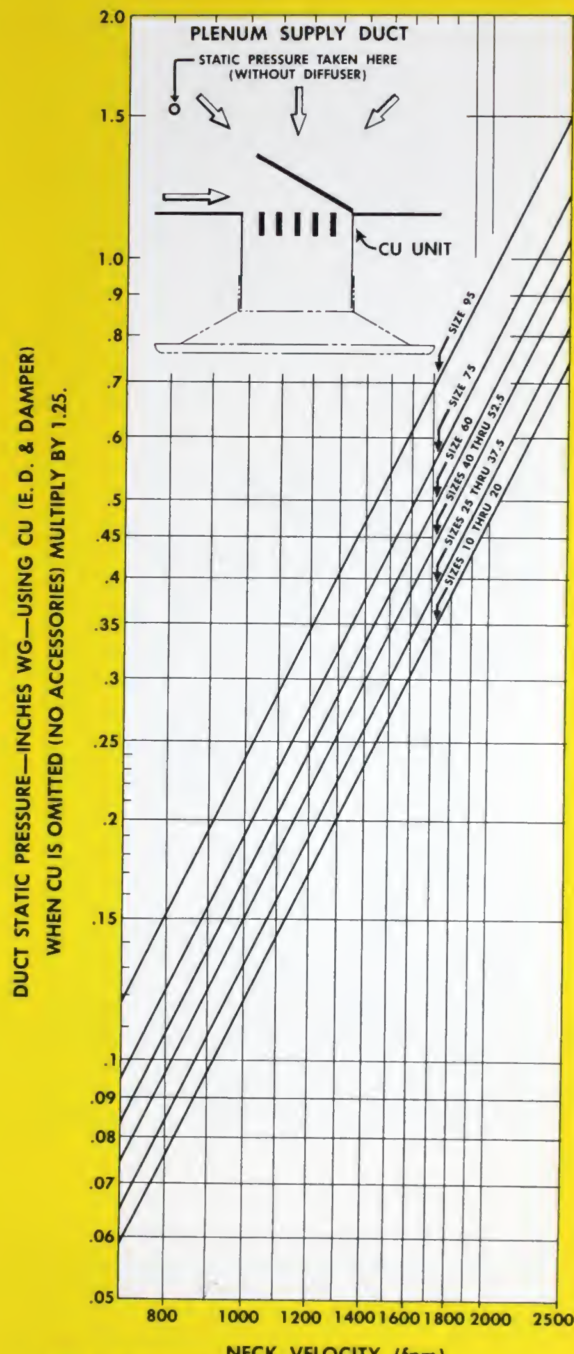
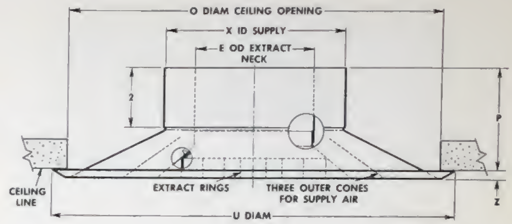


Fig. 3—Plenum approach—where duct velocity is less than 60% of the diffuser neck velocity.

TYPE **AC**

Anemostat Air Diffuser



SIZE	E	O	P	U	X	Z
15	4 1/16	12 1/2	3 9/16	14	6	5/16
20	5 1/16	17	3 7/8	18	8	3/8
25	6 1/16	21	4 3/16	22 1/2	10	1/2
30	8 1/16	25	4 1/2	27	12	5/8
35	9 1/16	30	4 11/16	32	14	3/4
40	10 1/16	33 1/2	5 5/16	36	16	3/4
45	12 1/16	38	5 3/4	41	18	3/4
50	13 1/16	42	5 7/8	47	20	7/8
60	16 1/16	50	6 1/4	58	24	1 3/8

All dimensions in inches.

The Type AC Anemostat Air Diffuser is a combination air supply and extract outlet for heating, ventilating and cooling. Air is supplied through the three outer cones and extracted through the inner rings. A dead air space between the supply and extract sections prevents short-circuiting of supply air.

The outlet is designed so that 75% of the supply air volume is extracted when supply and extract neck velocities are the same. This ratio may be changed, but should not exceed 100%.

The AC Anemostat Air Diffuser may be used on exposed ductwork or flush to the ceiling and can be combined with pendent lighting fixture.

When this outlet is to be used during the heating cycle where low design temperatures prevail, the designing engineer is cautioned to compensate for cold wall effects with direct radiation.

For volume control, as well as for equalization of air flow in the supply section, the Type ACED must be used. Volume control in the extract section is easily accomplished by means of the Type ACXD extract butterfly damper.

HOW TO USE THE RATING TABLE

1. Determine the supply air volume in cfm to be distributed by combination supply and return Type AC Anemostat Air Diffuser. In addition, from Page 7, determine the maximum permissible noise level for the type of occupancy.
2. Follow down the sharp black line indicating the maximum permissible noise level until it intersects approximately the design cfm or supply air volume. Read across horizontally to the left for the size of the diffuser, as well as supply and extract neck diameters. Read vertically upwards for the neck velocity, and in the same square, besides air volume in cfm for both supply and extract, are the corresponding resistances in inches of water and the radius of diffusion.
3. With the same neck velocity in both the supply and extract sections, there will be extracted approximately 75% of the supply air volume. If a greater portion of extract air, up to 100% supply air volume, is required, find this quantity in the extract capacity line for the same size outlet. Care should be taken that this does not exceed the maximum permissible noise level. If it does, select the next size larger outlet and recheck.
4. Example—380 cfm of air is to be supplied to a combination supply return outlet in a Board of Directors meeting room. This

SIZE		NECK DIAM. inches	NECK AREA sq. in.	sq. ft.	RATING	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	db ↓
db →								30		36			43				50	
15	SUPPLY	6	15.71	.109	Capacity in cfm	76	87	98	110	120	130	140	155	165	175	185	195	
					Static pressure in. wg	.035	.045	.057	.069	.085	.101	.121	.135	.159	.181	.205	.231	
	EXTRACT	4	12.56	.087	Capacity in cfm	61	70	78	87	96	105	115	.120	130	140	150	155	
					Neg. Static pressure*	.025	.033	.043	.054	.065	.077	.089	.104	.119	.136	.153	.172	
					Min.—max. rad. diff.	3-5	3-6	3-6	3-6	3-7	4-7	4-8	4-8	4-8	4-9	5-9	5-9	
20	SUPPLY	8	30.63	.213	Capacity in cfm	149	170	191	213	234	255	276	298	319	340	362	383	
					Static pressure in. wg	.031	.041	.051	.063	.076	.091	.108	.121	.141	.161	.185	.208	
	EXTRACT	5	19.64	.136	Capacity in cfm	95	109	125	136	149	163	177	190	204	218	231	245	
					Neg. Static pressure*	.024	.032	.042	.052	.063	.075	.087	.101	.116	.133	.149	.168	
					Min.—max. rad. diff.	4-7	4-8	4-8	4-9	5-9	5-10	5-10	5-10	5-11	6-11	6-11	6-12	
25	SUPPLY	10	50.27	.349	Capacity in cfm	244	279	314	349	384	420	455	490	525	560	595	630	
					Static pressure in. wg	.027	.035	.043	.054	.065	.079	.093	.107	.123	.142	.162	.181	
	EXTRACT	6	28.27	.196	Capacity in cfm	137	159	176	196	214	235	255	275	295	315	333	353	
					Neg. Static pressure*	.024	.031	.041	.050	.061	.072	.084	.098	.112	.128	.144	.162	
					Min.—max. rad. diff.	5-9	5-9	5-10	5-10	5-10	6-11	6-12	6-12	6-13	7-13	7-13	7-14	
30	SUPPLY	12	62.84	.436	Capacity in cfm	305	350	390	435	480	525	565	610	655	700	740	785	57
					Static pressure in. wg	.026	.034	.042	.052	.062	.077	.091	.103	.118	.135	.155	.172	
	EXTRACT	8	50.26	.349	Capacity in cfm	245	280	315	350	385	420	455	490	525	560	595	630	
					Neg. Static pressure*	.022	.029	.039	.048	.058	.068	.080	.093	.106	.122	.137	.154	
					Min.—max. rad. diff.	5-11	6-11	6-12	6-13	7-13	7-14	7-15	8-15	8-16	8-17	9-17	9-18	
35	SUPPLY	14	90.32	.627	Capacity in cfm	435	500	560	625	685	750	810	875	940	1000	1065	1130	
					Static pressure in. wg	.024	.032	.039	.049	.059	.070	.083	.094	.110	.124	.142	.160	
	EXTRACT	9	63.62	.442	Capacity in cfm	308	350	395	440	485	530	570	615	660	705	750	790	
					Neg. Static pressure*	.021	.023	.037	.045	.054	.065	.076	.088	.100	.115	.129	.145	
					Min.—max. rad. diff.	6-13	6-13	7-13	7-14	7-15	8-16	8-16	9-17	9-18	9-19	10-19	10-20	
40	SUPPLY	16	122.52	.851	Capacity in cfm	595	680	765	850	935	1002	1100	1190	1275	1360	1445	1530	
					Static pressure in. wg	.023	.029	.037	.046	.056	.066	.079	.089	.103	.120	.133	.150	
	EXTRACT	10	78.54	.545	Capacity in cfm	382	437	490	545	600	655	710	760	820	870	925	980	
					Neg. Static pressure*	.020	.027	.035	.043	.052	.061	.071	.083	.095	.109	.123	.138	
					Min.—max. rad. diff.	7-14	7-14	7-16	8-16	8-17	9-18	9-19	9-19	10-20	10-21	11-22	11-23	
45	SUPPLY	18	141.37	.982	Capacity in cfm	685	785	880	980	1080	1175	1270	1370	1470	1565	1665	1765	
					Static pressure in. wg	.022	.028	.035	.044	.054	.065	.075	.085	.099	.115	.131	.148	
	EXTRACT	12	113.10	.785	Capacity in cfm	550	630	705	785	865	945	1020	1100	1180	1260	1335	1415	
					Neg. Static pressure*	.019	.025	.032	.040	.048	.057	.066	.077	.088	.101	.113	.127	
					Min.—max. rad. diff.	7-15	8-16	9-17	9-18	10-19	10-20	11-21	11-23	12-24	12-25	13-25	13-26	
50	SUPPLY	20	181.43	1.239	Capacity in cfm	880	1010	1130	1260	1390	1510	1640	1760	1890	2010	2140	2270	
					Static pressure in. wg	.021	.027	.034	.042	.052	.062	.072	.082	.093	.110	.125	.137	
	EXTRACT	13	132.73	.992	Capacity in cfm	645	735	830	920	1010	1110	1200	1290	1380	1480	1570	1660	
					Neg. Static pressure*	.017	.022	.029	.036	.043	.051	.060	.069	.079	.091	.102	.115	
					Min.—max. rad. diff.	8-17	9-18	9-20	10-21	10-22	11-23	11-24	12-24	12-25	13-26	14-27	14-28	
60	SUPPLY	24	251.33	1.746	Capacity in cfm	1220	1400	1570	1750	1920	2090	2270	2440	2620	2790	2970	3140	65
					Static pressure in. wg	.019	.025	.031	.039	.048	.057	.067	.077	.087	.101	.115	.131	
	EXTRACT	16	201.06	1.396	Capacity in cfm	975	1120	1260	1400	1540	1680	1820	1950	2090	2230	2370	2510	
					Neg. Static pressure*	.015	.019	.026	.032	.038	.045	.053	.061	.070	.080	.090	.101	
					Min.—max. rad. diff.	11-21	11-22	12-24	13-25	13-27	14-28	15-29	15-31	16-32	17-33	17-35	18-36	

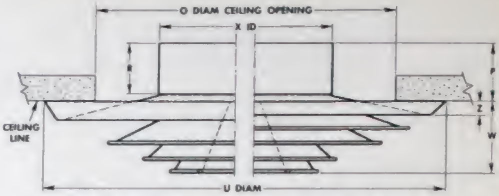
is approximately the same as a private office acoustically treated, or a noise level of 36 db is allowed. Read down the sharp black line (36 db) until you reach 390 cfm, or Size 30 Type AC Anemostat Air Diffuser. By interpolation, supply neck velocity is 875 fpm, the supply resistance is .040 inches of water, and the radius of diffusion is 5 to 11 feet. The extract volume is 305 cfm, at 875 fpm, and at .033" H_2O. If 100% extract ratio is desired, the extract neck velocity would have to be increased to 1090 fpm, which would cause an increase beyond the maximum permissible noise level. Therefore, a size 35 Type AC Anemostat Air Diffuser would be required.

***IMPORTANT NOTE FOR EXTRACT PORTION**

The pressure drop through the AC extract section is less than through a duct opening, and therefore is termed NEGATIVE static pressure in above performance data.

For the total extract static pressure required, multiply the static pressure values required for the duct take-off as given on pages 8-9 by 1.55 and then *subtract* the negative static pressure values given in table above.

TYPE AR-3 Anemostat Air Diffuser



SIZES No. 15, 20 & 25 ARE 5 CONE UNITS

SIZES No. 30, 37.5, 45 52.5, 60, 75 & 95 ARE 6 CONE UNITS

SIZE	O	P	R	U	W	X	Z
15	11	2 5/16	2	15	2 3/4	6	3/4
20	13	2 3/8	2	20	3 11/16	8	1
25	17	2 3/4	2	24	4 1/4	10	1
30	18	2 1/4	2	26	5 1/2	12	1
37.5	21 1/2	2	2	30	6 15/16	15	1 3/16
45	26 1/2	2 1/8	2	36	9 3/8	18	1 5/16
52.5	34	3	3	45	10 9/16	21	1 5/16
60	34	2 3/4	3	45	10 9/16	24	1 5/16
75	60	7 5/8	3	68	12 15/16	30	1 1/2
95	60	6 1/2	3	68	12 15/16	38	1 1/2

All dimensions in inches.

The AR-3 Anemostat Air Diffuser is the best air diffuser in the industry. This is a five cone diffuser through size No. 25 and a six cone diffuser for the larger sizes. It is used for heating, ventilation, cooling and refrigeration. When perfect air diffusion performance is required the AR-3 has no equal. For critical problems of air distribution, particularly those involving frequent air changes with low velocity air motion throughout the occupied zone, or when there are extreme temperature differentials in cooling, specify the AR-3 Anemostat Air Diffuser. This unit can be used on flush ceilings, or open ducts, and can be combined with pendant lighting fixtures.

For volume control, use the Anemostat Combo Units as required. For best performance of this unit on critical problems specify a second ED, which should be set in the neck of the diffuser with the blades positioned 90° different from the blades in the Combo Unit.

Performance Data

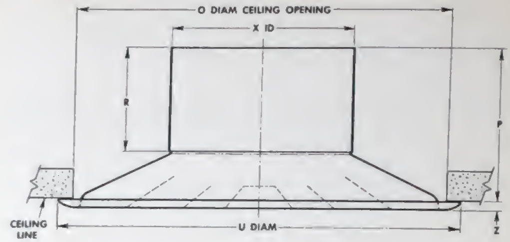
db →					30	36			43				50			57	
			NECK VELOCITY (*in feet per minute*)														
SIZE	NECK AREA	RATING	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500
15	sq. in. 28.27	Capacity in cfm	135	155	175	195	215	235	255	275	295	315	335	355	370	390	490
6″		Static pressure in. wg	.034	.045	.057	.071	.086	.103	.122	.143	.164	.185	.21	.235	.266	.295	.467
neck diam.	sq. ft. .196	Min.—max. rad. diff.	3-4	3-5	3-5	3-6	3-6	3-7	3-7	3-7	4-8	4-8	4-9	4-9	4-9	5-10	6-12
20	sq. in. 50.27	Capacity in cfm	245	280	315	350	385	420	455	490	525	560	595	630	665	700	875
8″		Static pressure in. wg	.048	.062	.079	.098	.12	.145	.17	.20	.23	.26	.295	.335	.375	.42	.66
neck diam.	sq. ft. .349	Min.—max. rad. diff.	3-6	3-6	3-7	3-7	4-8	4-8	4-9	5-9	5-10	5-11	6-12	6-12	6-13	7-14	8-15
25	sq. in. 78.54	Capacity in cfm	380	435	490	545	600	655	710	765	820	870	925	980	1040	1090	1360
10″		Static pressure in. wg	.05	.065	.083	.105	.126	.152	.178	.21	.24	.272	.31	.35	.395	.45	.69
neck diam.	sq. ft. .545	Min.—max. rad. diff.	4-7	4-8	4-9	5-10	5-10	5-11	6-11	6-12	6-13	7-14	7-15	8-15	8-16	8-17	10-19
30	sq. in. 113.10	Capacity in cfm	550	630	705	785	865	940	1020	1100	1180	1260	1330	1410	1490	1570	1960
12″		Static pressure in. wg	.012	.016	.02	.025	.03	.037	.043	.05	.058	.066	.075	.085	.095	.105	.165
neck diam.	sq. ft. .785	Min.—max. rad. diff.	5-9	5-10	5-11	6-11	6-12	6-13	7-14	7-15	8-16	8-17	9-18	9-19	10-20	10-21	13-25
37.5	sq. in. 176.7	Capacity in cfm	860	980	1100	1230	1350	1470	1600	1720	1840	1960	2090	2210	2330	2450	3070
15″		Static pressure in. wg	.016	.021	.027	.037	.041	.049	.058	.068	.079	.089	.1	.114	.127	.14	.225
neck diam.	sq. ft. 1.227	Min.—max. rad. diff.	6-12	6-13	7-14	7-15	8-16	8-17	9-18	9-19	10-20	11-21	11-22	12-24	12-25	13-25	17-32
45	sq. in. 254.47	Capacity in cfm	1240	1410	1590	1770	1940	2120	2300	2470	2650	2830	3000	3180	3360	3530	4420
18″		Static pressure in. wg	.029	.038	.048	.059	.073	.088	.102	.12	.14	.158	.178	.2	.225	.25	.39
neck diam.	sq. ft. 1.767	Min.—max. rad. diff.	8-15	8-16	9-17	9-18	10-19	10-20	11-22	12-23	12-24	13-26	14-28	15-30	16-31	17-32	21-38
52.5	sq. in. 346.36	Capacity in cfm	1680	1920	2160	2400	2650	2890	3130	3370	3610	3850	4090	4330	4570	4810	6010
21″		Static pressure in. wg	.022	.029	.036	.045	.054	.065	.077	.09	.104	.118	.132	.15	.17	.19	.30
neck diam.	sq. ft. 2.405	Min.—max. rad. diff.	9-18	10-19	11-21	11-22	12-23	12-24	13-25	13-26	14-28	15-30	16-31	17-32	18-34	19-35	24-45
60	sq. in. 452.39	Capacity in cfm	2200	2510	2830	3140	3460	3770	4080	4400	4710	5030	5340	5650	5970	6280	7850
24″		Static pressure in. wg	.041	.054	.068	.085	.103	.123	.145	.17	.195	.22	.25	.285	.32	.35	.56
neck diam.	sq. ft. 3.141	Min.—max. rad. diff.	11-21	11-22	12-23	12-24	13-25	13-26	15-29	16-31	17-32	18-34	19-35	20-36	21-38	22-41	27-50
75	sq. in. 706.86	Capacity in cfm	3440	3930	4420	4910	5400	5890	6380	6870	7360	7850	8340	8830	9330	9820	12270
30″		Static pressure in. wg	.046	.061	.078	.097	.118	.142	.166	.195	.225	.255	.29	.33	.37	.41	.64
neck diam.	sq. ft. 4.908	Min.—max. rad. diff.	13-25	13-26	14-27	14-28	15-30	16-32	17-33	18-34	20-36	21-38	22-41	24-45	25-48	26-50	32-60
95	sq. in. 1134.1	Capacity in cfm	5510	6300	7090	7880	8660	9450	10240	11030	11810	12600	13390	14180	14960	15750	19690
38″		Static pressure in. wg	.12	.16	.205	.255	.31	.37	.45	.52	.60	.68	.78	.88	.99	1.1	1.75
neck diam.	sq. ft. 7.875	Min.—max. rad. diff.	17-33	19-35	20-38	22-41	23-44	25-48	27-51	29-55	32-59	34-63	36-68	38-72	40-76	42-78	52-90

db ↓ 65

HOW TO USE THE RATING TABLE

1. After selecting the sound level value to be designed for as described on Page 7 determine the air volume in cfm to be distributed by the Type AR-3 Anemostat Air Diffuser.
2. Select the sound level working range at the top of the chart and follow down the stepped sharp black line selecting the diffuser, as determined by the capacity and radius of diffusion.
3. The corresponding static pressure in inches wg is listed below the capacity.
4. The correct minimum and maximum radius of diffusion are listed below the static pressure for the unit size and capacity. If these values do not correspond to the design conditions, consult your local Anemostat Sales Engineers.

Anemostat Air Diffuser



SIZE	O	P	R	U	X	Z	*
12.5	10¼	4¾	3½	11¼	5	¼	⅝
15	12½	5	3½	13½	6	⅜	⅝
20	17	5¾	3¾	18	8	⅜	⅝
25	21	6½	4	22½	10	½	⅝
30	25	7½	4½	27	12	⅝	⅝
37.5	31	8¾	5	33¾	15	¾	⅞
45	37	10⅛	5½	40½	18	⅞	⅞
52.5	44½	10⅞	4½	46¼	21	½	⅞
60	44½	10⅞	5⅛	46¼	24	½	⅞
75	65 11/16	13¼	4⅜	68	30	1	⅞
95	65 11/16	13¼	6 3/16	68	38	1	⅞

All dimensions in inches.
* Inner diameter of control shaft.

Note: Dimension "R" will permit the installation of one ED or CU Combo Unit above the spider of the C-2 and still be contained in the neck of the diffuser.

The Type C-2 Anemostat Air Diffuser is an adjustable air supply outlet consisting of four cones. The cones of the inner assembly (Cones 1, 2 and 3) are attached to the outer cone by a specially designed control bridge. This design permits instant removal and replacement of the inner assembly, reducing installation time.

The Type C-2 Anemostat Air Diffuser provides controlled, variable air distribution for heating, ventilating and cooling. By turning the smallest cone the third cone is raised or lowered thus varying the air discharge from a draftless horizontal pattern, used primarily for cooling, to an intermediate downward pattern used for heating and ventilating, or to a direct downward discharge used for projection heating or spot cooling.

The Type C-2 Anemostat Air Diffuser may be installed on exposed ductwork or flush to the ceiling.

The Type C-2 Anemostat Air Diffuser is equally efficient on a high or extremely low ceiling. Its performance can be easily adjusted to neutralize the effects of local sources of heat gain or loss which would otherwise cause stratification. This applies not only to internal heat loads, but also to the outside heat load caused by exposed wall and window areas.

The air flow pattern of the Type C-2 Anemostat Air Diffuser is determined by the adjustment setting (relative position of Cone 3 with regard to other cones). No tools are required to adjust the air flow pattern.

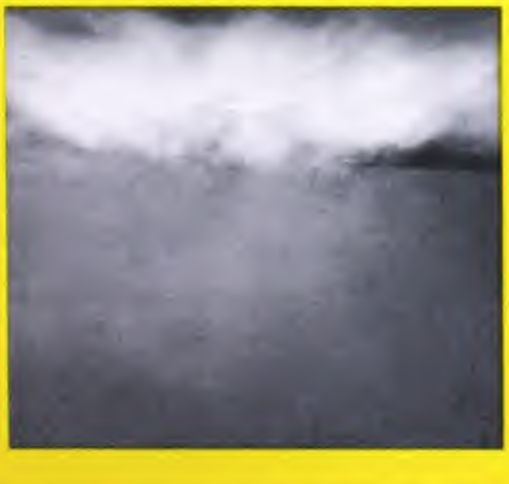
The Type ED Equalizing Deflector must be used with the Type C-2 Anemostat Air Diffuser.

Volume control of the Type C-2 Anemostat Air Diffuser may be accomplished with the CU Combo Unit.

For general air conditioning design with flush ceilings use the table on Page 16 for technical data. For other applications please refer to the tables on Page 17.

Downward pattern used for projection heating and spot cooling applications.

Intermediate pattern used for heating and ventilating applications.



Flat horizontal pattern used primarily for cooling applications.

TYPE C-2

Performance Data

FLUSH TO CEILING APPLICATION

SIZE	NECK AREA	RATING	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	
db →					30		36				43				50		57db	
			NECK VELOCITY (*in feet per minute*)															
12.5	sq. in. 19.64	Capacity in cfm	95	110	120	135	150	165	175	190	205	220	230	245	260	270	340	
5"		Static pressure in. wg	.021	.028	.035	.043	.053	.062	.072	.084	.096	.110	.124	.137	.151	.172	.265	
neck diam	sq. ft. .136	Min.—max. rad. diff.	3-5	3-5	3-5	3-6	3-6	3-7	4-7	4-8	4-9	5-10	5-11	6-12	6-13	7-14	8-16	
15	sq. in. 28.27	Capacity in cfm	135	155	175	195	215	235	255	275	295	315	335	355	370	390	490	
6"		Static pressure in. wg	.022	.028	.036	.044	.054	.064	.074	.086	.099	.112	.127	.143	.158	.175	.275	
neck diam	sq. ft. .196	Min.—max. rad. diff.	3-5	3-6	3-6	3-7	4-7	4-8	4-9	5-10	5-11	6-12	6-13	6-14	7-14	7-15	9-18	
20	sq. in. 50.27	Capacity in cfm	245	280	315	350	385	420	455	490	525	560	595	630	665	700	875	
8"		Static pressure in. wg	.024	.031	.039	.048	.058	.070	.081	.094	.108	.123	.137	.155	.174	.193	.305	
neck diam	sq. ft. .349	Min.—max. rad. diff.	4-7	4-8	4-9	5-10	5-11	5-12	6-12	6-13	7-14	7-15	8-16	9-18	9-19	10-20	11-21	
25	sq. in. 78.54	Capacity in cfm	380	435	490	545	600	655	710	765	820	875	925	980	1040	1090	1360	
10"	sq. ft. .545	Static pressure in. wg	.026	.034	.043	.053	.064	.075	.096	.104	.118	.133	.150	.169	.188	.207	.325	
neck diam		Min.—max. rad. diff.	5-11	6-12	6-13	7-14	7-15	8-16	8-17	8-18	9-19	10-20	11-21	11-22	12-23	13-26	14-28	
30	sq. in. 113.10	Capacity in cfm	550	630	705	785	865	940	1020	1100	1180	1260	1330	1410	1490	1570	1960	65
12"		Static pressure in. wg	.027	.036	.046	.057	.068	.080	.098	.110	.126	.143	.161	.180	.201	.223	.350	
neck diam	sq. ft. .785	Min.—max. rad. diff.	7-14	7-15	8-16	8-17	9-18	9-19	10-20	10-21	11-22	12-25	13-26	13-27	14-29	15-30	18-35	
37.5	sq. in. 176.7	Capacity in cfm	860	980	1100	1230	1350	1470	1600	1720	1840	1960	2090	2210	2330	2450	3070	
15"		Static pressure in. wg	.030	.039	.049	.061	.074	.088	.103	.119	.136	.153	.174	.197	.218	.241	.380	
neck diam	sq. ft. 1.227	Min.—max. rad. diff.	8-17	9-18	9-19	10-21	11-22	12-24	13-26	13-27	14-29	15-30	16-32	17-35	18-37	18-39	23-44	
45	sq. in. 254.47	Capacity in cfm	1240	1410	1590	1770	1940	2120	2300	2470	2650	2830	3000	3180	3360	3530	4420	
18"		Static pressure in. wg	.032	.042	.053	.065	.079	.094	.110	.137	.144	.161	.187	.204	.230	.257	.400	
neck diam	sq. ft. 1.767	Min.—max. rad. diff.	11-22	12-25	13-26	14-28	15-30	15-32	16-33	17-34	18-36	19-38	20-40	21-43	22-44	23-46	28-58	
52.5	sq. in. 346.36	Capacity in cfm	1680	1920	2160	2400	2650	2890	3130	3370	3610	3850	4090	4330	4570	4810	6010	
21"		Static pressure in. wg	.029	.039	.049	.06	.073	.087	.102	.12	.14	.158	.18	.20	.222	.25	.39	
neck diam	sq. ft. 2.405	Min.—max. rad. diff.	12-24	14-28	15-30	16-32	17-34	18-36	19-38	20-40	21-42	22-44	23-46	24-48	25-50	27-55	33-66	
60	sq. in. 452.39	Capacity in cfm	2200	2510	2830	3140	3460	3770	4080	4400	4710	5030	5340	5650	5970	6280	7850	
24"		Static pressure in. wg	.052	.068	.087	.11	.133	.167	.184	.215	.25	.285	.32	.36	.40	.45	.71	
neck diam	sq. ft. 3.141	Min.—max. rad. diff.	15-30	16-33	17-35	18-37	19-38	20-40	21-42	23-45	24-48	25-51	27-55	28-57	30-61	31-63	37-75	
75	sq. in. 706.86	Capacity in cfm	3440	3930	4420	4910	5400	5890	6380	6870	7360	7850	8340	8830	9330	9820	12270	
30"		Static pressure in. wg	.06	.079	.10	.124	.15	.18	.21	.25	.285	.325	.37	.415	.465	.515	.81	
neck diam	sq. ft. 4.908	Min.—max. rad. diff.	18-36	19-38	20-41	21-43	22-45	23-47	24-49	25-50	26-52	29-57	31-60	33-64	35-69	37-75	44-87	
95	sq. in. 1134.1	Capacity in cfm	5510	6300	7090	7880	8660	9450	10240	11030	11810	12600	13390	14180	14960	15750	19690	
38"		Static pressure in. wg	.15	.20	.25	.31	.38	.45	.53	.62	.71	.81	.91	1.04	1.17	1.3	2.0	
neck diam	sq. ft. 7.875	Min.—max. rad. diff.	24-48	26-52	28-56	31-63	33-66	35-71	37-75	40-80	44-88	47-95	50-101	53-107	56-113	59-118	72-141	

Adjustment setting of cone 3 is flush with outer cone.

HOW TO USE—Cooling, Ventilating and Conventional Heating when Outlet is Flush to Ceiling.

1. Determine the supply air volume in cfm to be distributed by the Type C-2 Anemostat Air Diffuser. In addition, from Page 7, determine the maximum permissible noise level for the type of occupancy.
2. Follow down the sharp black line indicating the maximum permissible noise level until it intersects approximately the design cfm. Read across horizontally to the left for the size of the diffuser and neck diameter. Read vertically upwards for the neck velocity. In the square beside capacity is the static resistance and the radius of diffusion.

Example: A Size 25 C-2 handling 655 cfm at 1200 fpm neck velocity will have a resistance of 0.075" H_2O.

EXPOSED DUCTWORK & PROJECTION HEATING

SIZE	NECK AREA	RATING	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500
db →					30		36				43				50		57
		NECK VELOCITY *(in feet per minute)*															
12.5	sq. in. 19.64	Capacity in cfm	95	110	120	135	150	165	175	190	205	220	230	245	260	270	340
5" neck diam		Static pressure in. wg	.013	.017	.022	.027	.033	.039	.046	.053	.061	.07	.078	.088	.098	.11	.17
	sq. ft. .136	Min.—max. rad. diff.	3-5	3-5	3-6	3-6	3-6	3-6	4-7	4-7	4-8	4-8	5-9	5-10	5-11	6-12	7-14
		*Projection heating S. P. in wg	.035	.047	.058	.072	.086	.103	.122	.14	.163	.185	.21	.235	.26	.29	.451
15	sq. in. 28.27	Capacity in cfm	135	155	175	195	215	235	255	275	295	315	335	355	370	390	490
6" neck diam		Static pressure in. wg	.014	.018	.023	.029	.035	.041	.048	.056	.064	.073	.082	.091	.103	.115	.182
	sq. ft. .196	Min.—max. rad. diff.	3-5	3-5	3-6	3-6	3-7	4-7	4-8	4-8	5-9	5-10	5-11	6-12	6-13	6-13	8-16
		*Projection heating S. P. in wg	.037	.048	.06	.074	.089	.107	.126	.147	.168	.192	.218	.246	.272	.302	.475
20	sq. in. 50.27	Capacity in cfm	245	280	315	350	385	420	455	490	525	560	595	630	665	700	875
8" neck diam		Static pressure in. wg	.015	.02	.026	.032	.038	.046	.053	.061	.071	.08	.091	.102	.113	.126	.198
	sq. ft. .349	Min.—max. rad. diff.	3-6	4-7	4-8	4-9	5-10	5-11	5-12	6-12	6-13	7-14	7-15	8-16	8-17	9-18	10-20
		*Projection heating S. P. in wg	.040	.053	.067	.083	.098	.115	.138	.163	.188	.213	.238	.266	.298	.332	.52
25	sq. in. 78.54	Capacity in cfm	380	435	490	545	600	655	710	765	820	875	925	980	1040	1090	1360
10" neck diam		Static pressure in. wg	.017	.022	.028	.034	.041	.049	.057	.067	.077	.088	.099	.111	.123	.138	.215
	sq. ft. .545	Min.—max. rad. diff.	5-10	5-11	5-12	6-12	6-13	7-14	7-15	7-16	8-16	8-17	9-18	10-19	11-21	11-22	12-24
		*Projection heating S. P. in wg	.044	.058	.073	.091	.11	.13	.152	.175	.203	.233	.265	.297	.329	.362	.57
30	sq. in. 113.10	Capacity in cfm	550	630	705	785	865	940	1020	1100	1180	1260	1330	1410	1490	1570	1960
12" neck diam		Static pressure in. wg	.018	.024	.03	.037	.045	.053	.062	.072	.083	.094	.106	.118	.133	.148	.232
	sq. ft. .785	Min.—max. rad. diff.	6-12	6-13	7-14	7-15	8-16	8-17	8-18	9-19	9-20	10-21	11-22	12-24	13-25	14-27	16-37
		*Projection heating S. P. in wg	.047	.062	.077	.095	.115	.138	.163	.188	.215	.243	.274	.307	.347	.387	.60
37.5	sq. in. 176.7	Capacity in cfm	860	980	1100	1230	1350	1470	1600	1720	1840	1960	2090	2210	2330	2450	3070
15" neck diam		Static pressure in. wg	.019	.025	.032	.04	.048	.058	.066	.078	.09	.102	.114	.127	.142	.158	.25
	sq. ft. 1.227	Min.—max. rad. diff.	7-15	8-16	8-17	9-18	10-20	10-21	11-22	12-24	13-26	13-27	14-29	15-30	16-32	16-33	20-39
		*Projection heating S. P. in wg	.05	.066	.083	.103	.125	.15	.175	.203	.232	.263	.299	.335	.371	.412	.628
45	sq. in. 254.47	Capacity in cfm	1240	1410	1590	1770	1940	2120	2300	2470	2650	2830	3000	3180	3360	3530	4420
18" neck diam		Static pressure in. wg	.02	.027	.034	.041	.051	.06	.07	.082	.094	.107	.12	.135	.15	.17	.263
	sq. ft. 1.767	Min.—max. rad. diff.	10-20	11-21	11-22	12-24	13-25	13-26	14-27	15-29	16-31	16-32	17-34	18-36	19-38	21-42	25-50
		*Projection heating S. P. in wg	.054	.07	.09	.112	.135	.16	.185	.217	.25	.283	.32	.358	.398	.44	.698
52.5	sq. in. 346.36	Capacity in cfm	1680	1920	2160	2400	2650	2890	3130	3370	3610	3850	4090	4330	4570	4810	6010
21" neck diam		Static pressure in. wg	.019	.025	.032	.039	.048	.057	.066	.078	.091	.103	.117	.13	.144	.162	.254
	sq. ft. 2.405	Min.—max. rad. diff.	11-22	12-24	13-26	14-28	15-30	16-32	16-33	17-34	18-36	19-38	20-41	21-42	22-45	23-47	29-59
		*Projection heating S. P. in wg	.043	.058	.073	.09	.109	.13	.152	.18	.21	.237	.27	.30	.33	.374	.58
60	sq. in. 452.39	Capacity in cfm	2200	2510	2830	3140	3460	3770	4080	4400	4710	5030	5340	5650	5970	6280	7850
24" neck diam		Static pressure in. wg	.034	.044	.057	.072	.087	.109	.12	.14	.162	.185	.208	.234	.26	.293	.46
	sq. ft. 3.141	Min.—max. rad. diff.	13-26	14-28	15-30	16-32	16-33	17-35	18-36	19-38	21-41	22-44	23-46	24-49	26-52	27-55	33-66
		*Projection heating S. P. in wg	.078	.102	.129	.184	.198	.249	.274	.32	.372	.425	.477	.536	.596	.67	1.06
75	sq. in. 706.86	Capacity in cfm	3440	3930	4420	4910	5400	5890	6380	6870	7360	7850	8340	8830	9330	9820	12270
30" neck diam		Static pressure in. wg	.039	.051	.065	.081	.097	.117	.137	.163	.185	.212	.241	.27	.302	.335	.527
	sq. ft. 4.908	Min.—max. rad. diff.	16-32	17-34	18-36	19-38	20-40	21-42	22-44	23-46	24-48	26-52	27-55	29-58	30-61	32-65	39-80
		*Projection heating S. P. in wg	.089	.117	.148	.184	.222	.266	.311	.37	.422	.48	.547	.614	.688	.761	1.19
95	sq. in. 1134.1	Capacity in cfm	5510	6300	7090	7880	8660	9450	10240	11030	11810	12600	13390	14180	14960	15750	19690
38" neck diam		Static pressure in. wg	.097	.13	.163	.202	.247	.293	.345	.404	.461	.526	.592	.68	.76	.84	1.3
	sq. ft. 7.875	Min.—max. rad. diff.	21-42	23-46	25-50	27-54	29-58	31-62	34-67	36-72	39-79	42-83	45-92	47-95	50-100	53-106	63-122
		*Projection heating S. P. in wg	.217	.29	.362	.45	.55	.655	.77	.9	1.03	1.17	1.32	1.51	1.69	1.89	2.9

db ↓ 65

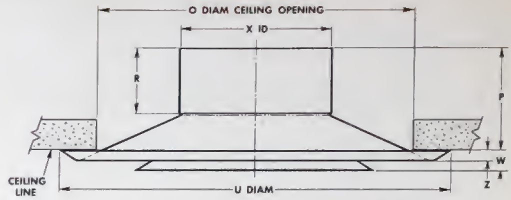
For exposed ductwork cone 3 is in lowered position.
* For projection heating cone 3 is in raised position.

HOW TO USE—Cooling, Ventilating, Conventional Heating and Projection Heating when Outlet is on Exposed Duct Work.

1. Determine the supply air volume in cfm to be distributed by the Type C-2 Anemostat Air Diffuser. In addition, from Page 7, determine the maximum permissible noise level for the type of occupancy.
2. Follow down the sharp black line indicating the maximum permissible noise level until it intersects approximately the design cfm. Read across horizontally to the left for the size of the diffuser and neck diameter. Read vertically upwards for the neck velocity. In the square beside capacity is the static resistance for both horizontal and projection pattern, as well as the radius of diffusion for horizontal pattern.

   Example: A Size 25 C-2 handling 655 cfm at 1200 fpm neck velocity will have a resistance of 0.049" H_2O in the horizontal pattern and 0.130" for the projection pattern.
3. Projection heating is only recommended where a warm blanket of air is required, such as over entrances to combat cold infiltration. Do not use in auditoriums or coliseums.

TYPE CM-1 Anemostat Air Diffuser



Diam of Center Hole Sizes 10-15 13/32"; 20-30 15/32"; 37.5-75 13/16"

SIZE	O	P	R	U	W	X	Z
10	10½	3⅜	2	13	11/16	4	⅜
12.5	10½	3⅜	2 3/16	13	11/16	5	⅜
15	10½	3⅜	2⅜	13	11/16	6	⅜
20	16	3½	2	18	⅞	8	⅜
25	21	4¼	2	24	1 1/16	10	½
30	21	4¼	2⅜	24	1 1/16	12	½
37.5	31	5⅜	2	34	1⅜	15	½
45	31	5⅜	2⅝	34	1⅜	18	½
52.5	45	6⅞	2	48	1 13/16	21	⅝
60	45	6⅞	2⅝	48	1 13/16	24	⅝
75	54½	7⅜	2	60	2¼	30	¾

All dimensions in inches.

The Type CM-1 Anemostat Air Diffuser is an air supply outlet consisting of four cones for heating, ventilating and cooling. It consists of two parts, the outer cone and the inner assembly. The inner assembly is easily attached to the outer cone by a simple, time and labor saving method.

The Type CM-1 Anemostat Air Diffuser may be installed on exposed ductwork or flush to the ceiling.

For volume control, use the Anemostat Combo Units as required. For best performance of this unit on critical problems, specify a second ED, which should be set in the neck of the diffuser with the blades positioned 90° different from the blades in the Combo Unit.

Performance Data

TYPE CM-1

db → 30 36 43 50 57

db ↓ 65

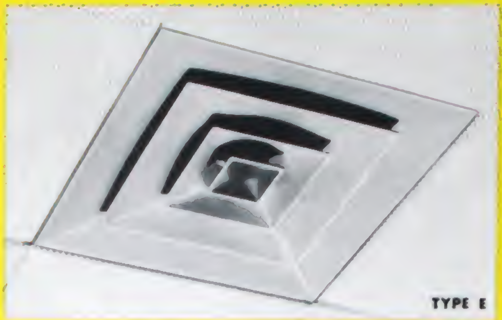
SIZE	NECK AREA	RATING	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
			NECK VELOCITY (*in feet per minute*)													
10	sq. in. 12.57	Capacity in cfm	61	70	78	87	96	105	115	120	130	140	150	155	165	175
4" neck diam	sq. ft. .087	Static pressure in. wg	.022	.029	.036	.045	.054	.065	.078	.091	.105	.118	.135	.150	.170	.190
		Min.—max. rad. diff.	3-5	3-5	3-6	3-7	4-7	4-8	5-9	5-10	6-11	6-12	7-13	7-14	8-15	8-16
12.5	sq. in. 19.64	Capacity in cfm	95	110	120	135	150	165	175	190	205	220	230	245	260	270
5" neck diam	sq. ft. .136	Static pressure in. wg	.033	.043	.055	.068	.083	.101	.119	.138	.161	.182	.208	.235	.263	.292
		Min.—max. rad. diff.	3-5	3-6	3-7	4-7	4-8	4-9	5-9	5-10	6-11	6-12	7-13	7-14	8-15	8-16
15	sq. in. 28.27	Capacity in cfm	135	155	175	195	215	235	255	275	295	315	335	355	370	390
6" neck diam	sq. ft. .196	Static pressure in. wg	.046	.060	.077	.095	.117	.142	.167	.196	.230	.260	.296	.332	.376	.420
		Min.—max. rad. diff.	3-6	3-7	4-7	4-8	5-9	5-10	5-11	6-11	6-12	7-13	7-14	8-15	8-16	8-17
20	sq. in. 50.27	Capacity in cfm	245	280	315	350	385	420	455	490	525	560	595	630	665	700
8" neck diam	sq. ft. .349	Static pressure in. wg	.037	.049	.063	.079	.095	.115	.136	.159	.183	.210	.238	.270	.300	.335
		Min.—max. rad. diff.	4-7	4-8	4-9	5-9	5-10	6-11	6-12	6-13	7-14	7-15	8-16	8-17	9-18	11-20
25	sq. in. 78.54	Capacity in cfm	380	435	490	545	600	655	710	765	820	870	925	980	1040	1090
10" neck diam	sq. ft. .545	Static pressure in. wg	.036	.047	.061	.076	.092	.112	.132	.155	.178	.205	.230	.262	.290	.322
		Min.—max. rad. diff.	6-12	6-13	7-14	7-15	8-16	8-17	9-18	9-19	10-20	10-21	11-23	12-24	12-25	13-27
30	sq. in. 113.10	Capacity in cfm	550	630	705	785	865	940	1020	1100	1180	1260	1330	1410	1490	1570
12" neck diam	sq. ft. .785	Static pressure in. wg	.051	.068	.088	.110	.134	.161	.190	.222	.258	.293	.335	.380	.426	.475
		Min.—max. rad. diff.	7-14	8-15	8-16	9-18	9-19	10-20	10-21	11-22	12-24	13-26	13-27	14-28	15-30	16-32
37.5	sq. in. 176.7	Capacity in cfm	860	980	1100	1230	1350	1470	1600	1720	1840	1960	2090	2210	2330	2450
15" neck diam	sq. ft. 1.227	Static pressure in. wg	.044	.055	.067	.08	.095	.11	.125	.142	.16	.178	.195	.215	.24	.26
		Min.—max. rad. diff.	9-19	10-21	10-22	11-23	12-25	12-26	13-27	14-29	15-30	16-33	17-35	18-37	19-39	20-41
45	sq. in. 254.47	Capacity in cfm	1240	1410	1590	1770	1940	2120	2300	2470	2650	2830	3000	3180	3360	3530
18" neck diam	sq. ft. 1.767	Static pressure in. wg	.098	.122	.15	.18	.21	.245	.278	.315	.35	.39	.435	.48	.525	.575
		Min.—max. rad. diff.	11-23	12-25	13-27	14-29	15-32	16-33	17-35	18-37	19-40	20-41	21-43	22-45	24-49	25-52
52.5	sq. in. 346.36	Capacity in cfm	1680	1920	2160	2400	2650	2890	3130	3370	3610	3850	4090	4330	4570	4810
21" neck diam	sq. ft. 2.405	Static pressure in. wg	.039	.049	.06	.072	.084	.098	.11	.125	.14	.158	.175	.192	.21	.23
		Min.—max. rad. diff.	13-26	15-31	16-32	17-35	18-37	19-39	20-42	21-43	22-45	23-47	24-49	25-52	27-55	28-57
60	sq. in. 452.39	Capacity in cfm	2200	2510	2830	3140	3460	3770	4080	4400	4710	5030	5340	5650	5970	6280
24" neck diam	sq. ft. 3.141	Static pressure in. wg	.07	.09	.11	.13	.15	.175	.20	.225	.255	.285	.315	.345	.38	.415
		Min.—max. rad. diff.	16-33	17-35	18-37	19-39	20-41	21-43	22-45	24-49	25-51	27-56	29-59	31-62	32-65	34-68
75	sq. in. 706.86	Capacity in cfm	3440	3930	4420	4910	5400	5890	6380	6870	7360	7850	8340	8830	9330	9820
30" neck diam	sq. ft. 4.908	Static pressure in. wg	.06	.074	.09	.11	.127	.148	.17	.19	.215	.24	.265	.29	.32	.35
		Min.—max. rad. diff.	19-39	20-42	21-43	22-45	23-47	24-49	26-53	28-58	30-62	32-65	34-68	36-72	38-76	40-80

HOW TO USE THE RATING TABLE

1. After selecting the sound level value to be designed for as described on Page 7 determine the air volume in cfm to be distributed by the Type CM-1 Anemostat Air Diffuser.
2. Select the sound level working range at the top of the chart and follow down the stepped sharp black line selecting the diffuser, as determined by the capacity and radius of diffusion.
3. Follow the row of the correct capacity to the left to find the proper size number and neck diameter in the first column.
4. The corresponding static pressure resistance in in. wg is listed below the capacity.
5. The correct minimum and maximum radii of diffusion are listed below the static pressure resistance for the respective size and neck velocity.
6. Should the required radius of diffusion be below the minimum or above the maximum listed, contact your local Anemostat Sales Engineer.

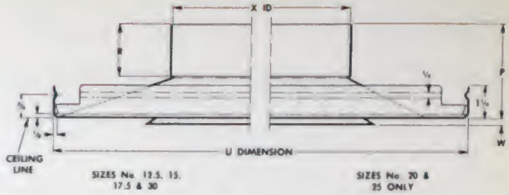
TYPES E & E-1

Anemostat Air Diffusers


TYPE E


TYPE E SIZES 20-25


TYPE E-1

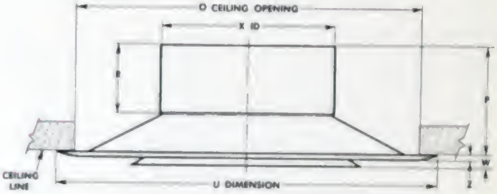


TYPE E

SIZE	P	R	U	W	X
10	3 3/4	2	12 x 12	5/16	4
12.5	3 3/4	2 3/16	12 x 12	5/16	5
15	3 3/4	2 3/8	12 x 12	5/16	6
17.5	3 1/8	2	12 x 12	5/16	7
20	4 5/8	2	24 x 24	1/2	8
25	4 5/8	2 7/16	24 x 24	1/2	10
30	5	2	24 x 24	13/16	12

All dimensions in inches.

Diam of Center Hole Sizes 10-30 3/8"



TYPE E-1

SIZE	O	P	R	U	W	X	Z
10	12 x 12	3 9/16	2	13 1/4 x 13 1/4	5/16	4	3/16
12.5	12 x 12	3 9/16	2 3/16	13 1/4 x 13 1/4	5/16	5	3/16
15	12 x 12	3 9/16	2 3/8	13 1/4 x 13 1/4	5/16	6	3/16
17.5	12 x 12	2 15/16	2	13 1/4 x 13 1/4	5/16	7	3/16
20	19 x 19	4 3/8	2	21 x 21	1/2	8	3/16
25	19 x 19	4 3/8	2 7/16	21 x 21	1/2	10	3/16
30	24 x 24	4 13/16	2	27 x 27	3/4	12	1/4
37.5	31 x 31	5 1/4	2	34 x 34	1	15	3/8
45	31 x 31	5	2 3/8	34 x 34	1	18	3/8

All dimensions in inches.

Diam of Center Hole Sizes 10-45 3/8"

The Types E and E-1 Square Anemostat Air Diffusers are air supply outlets consisting of four or more flaring members depending on the size of the unit. They consist of two parts, the outer member and the inner assembly. The inner assembly is easily attached to the outer member by a simple, time and labor saving snap-on method.

The Types E and E-1 Anemostat Air Diffusers provide circular air distribution for heating, ventilating and cooling as efficiently as do circular Anemostat Air Diffusers. They offer a wide variety of air distribution patterns by means of blank-off baffles. They may be installed with equal effectiveness, for example, in the center of a ceiling, in the four corners of a rectangular room, in a long narrow enclosure such as a hall, or in the corner of a corridor.

The Type E Anemostat Air Diffuser is for flush mounting with acoustical tile ceilings. It snaps into the T-bar framework that supports the acoustical units.

UNITED NATIONS USES SQUARE ANEMOSTATS

SIZE	NECK AREA	RATING	700	800	900	1000	1100	1200	1300	1400	1500
db →					30			36		43	
			NECK VELOCITY *(in feet per minute)*								
10 4″ neck diam	sq. in. 12.57	Capacity in cfm	61	70	78	87	96	105	115	120	130
	sq. ft. .087	Static pressure in. wg	.018	.023	.029	.036	.043	.052	.06	.07	.08
		Min.—max. rad. diff.	3-5	3-5	3-6	3-6	3-7	4-7	4-8	4-9	5-9
12.5 5″ neck diam	sq. in. 19.64	Capacity in cfm	95	110	120	135	150	165	175	190	205
	sq. ft. .136	Static pressure in. wg	.033	.043	.055	.067	.082	.096	.113	.13	.15
		Min.—max. rad. diff.	3-6	3-6	3-7	4-8	4-9	5-9	5-10	5-11	6-12
15 6″ neck diam	sq. in. 28.27	Capacity in cfm	135	155	175	195	215	235	255	275	295
	sq. ft. .196	Static pressure in. wg	.056	.074	.094	.115	.14	.167	.195	.225	.26
		Min.—max. rad. diff.	3-6	4-8	4-9	5-10	5-11	6-12	6-13	7-14	7-14
17.5 7″ neck diam	sq. in. 38.49	Capacity in cfm	185	215	240	265	295	320	350	375	400
	sq. ft. .267	Static pressure in. wg	.075	.10	.12	.15	.18	.22	.25	.29	.33
		Min.—max. rad. diff.	4-8	5-10	5-11	6-12	7-14	7-15	8-16	9-17	9-18
20 8″ neck diam	sq. in. 50.27	Capacity in cfm	245	280	315	350	385	420	455	490	525
	sq. ft. .349	Static pressure in. wg	.022	.028	.036	.044	.054	.064	.075	.087	.10
		Min.—max. rad. diff.	5-10	5-11	6-12	7-13	7-14	8-16	9-18	10-19	10-20
25 10″ neck diam	sq. in. 78.54	Capacity in cfm	380	435	490	545	600	655	710	765	820
	sq. ft. .545	Static pressure in. wg	.033	.043	.055	.067	.082	.096	.113	.13	.15
		Min.—max. rad. diff.	6-12	7-14	8-16	9-18	10-20	11-22	12-23	13-25	14-26
30 12″ neck diam	sq. in. 113.10	Capacity in cfm	550	630	705	785	865	940	1020	1100	1180
	sq. ft. .785	Static pressure in. wg	.016	.021	.026	.032	.039	.047	.055	.064	.074
		Min.—max. rad. diff.	7-15	8-16	10-19	11-22	12-24	13-26	14-27	15-29	16-30
37.5 15″ neck diam (E-1 Only)	sq. in. 176.7	Capacity in cfm	860	980	1100	1230	1350	1470	1600	1720	1840
	sq. ft. 1.227	Static pressure in. wg	.04	.051	.065	.08	.097	.115	.135	.157	.18
		Min.—max. rad. diff.	9-18	10-19	12-24	13-26	14-28	16-32	17-33	18-35	20-38
45 18″ neck diam (E-1 Only)	sq. in. 254.47	Capacity in cfm	1240	1410	1590	1770	1940	2120	2300	2470	2650
	sq. ft. 1.767	Static pressure in. wg	.082	.106	.135	.165	.2	.24	.28	.35	.37
		Min.—max. rad. diff.	12-25	14-29	15-30	17-34	19-38	21-42	23-45	24-47	26-50

db ↓ 50 57

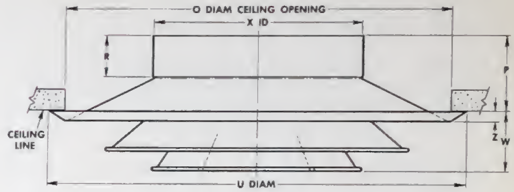
HOW TO USE THE RATING TABLE

1. After selecting the sound level value to be designed for as described on Page 7 determine the air volume in cfm to be distributed by the Type E or E-1 Anemostat Air Diffuser.
2. Select the sound level working range at the top of the chart and follow down the stepped sharp black line selecting the diffuser, as determined by the capacity and radius of diffusion.
3. Follow the row of the correct capacity to the left to find the proper size number and neck diameter in the first column.
4. The corresponding static pressure resistance in in. wg is listed below the capacity.
5. The correct minimum and maximum radii of diffusion are listed below the static pressure resistance for the respective size and neck velocity.
6. Should the required radius of diffusion be below the minimum or above the maximum listed, contact your local Anemostat Sales Engineer.

For volume control, use the Anemostat Combo Units as required. For best performance of this unit on critical problems, specify a second ED, which should be set in the neck of the diffuser with the blades positioned 90° different from the blades in the Combo Unit.

TYPE HU-4

Anemostat Air Diffuser for Central Systems



SIZE	O	P	R	U	W	X	Z
25	18½	3¹¹⁄₁₆	2	20	2⅞	10	½
30	23	4⁷⁄₁₆	2	25	2⅞	12	½
37.5	26	4⁷⁄₁₆	2	28	3⅛	15	½
45	30	4¹¹⁄₁₆	2	32	3⁷⁄₁₆	18	½
52.5	33½	5¹⁵⁄₁₆	3	36	3¹³⁄₁₆	21	½
60	38½	6⁵⁄₁₆	3	42	4⁹⁄₁₆	24	¾
75	48	7¼	3	52	6⅛	30	¾

All dimensions in inches.

COMMERCIAL-INDUSTRIAL APPLICATION

The HU-4 unit, equipped with the DE-2 radial deflector, can be used for heating, ventilating, evaporative cooling and other limited comfort cooling (not over 15 F temperature differential) in factories, supermarkets or other commercial-industrial applications where mounting heights do not exceed 16 feet. The HU-4 unit can be installed on exposed ductwork or flush to the ceiling.

With the radial blades of the DE-2 set in a vertical position, and the center disc damper open, the air pattern is that shown in the center photograph. This pattern is required for projection heating, spot cooling and ventilation.

By closing the disc damper, this pattern can be changed towards the horizontal to suit requirements of limited cooling or to spread the pattern for evaporative cooling or ventilation.

Because these units have a relatively low pressure drop, it is recommended that they always be installed with Combo Units for volume control and their equalization.

NOTE: This unit is ideal for heating, and ventilating auditoriums, coliseums and similar type structures. The DE-2 should be provided, and is usually set with the disc in a flat position to obtain horizontal distribution. These units should never be used in this type of application unless low returns are provided because any attempts to project the air downward creates serious problems when the thermostat is satisfied on the heating cycle and cold outside air is brought to the unit. If the combination of the HU-4, and DE-2 with low returns is designed into a system, the units perform in a satisfactory manner and good air distribution is assured on *both* heating and ventilating cycles.

Performance Data

TYPE HU-4

RATING TABLES FOR TYPE HU-4 WITH DE-2

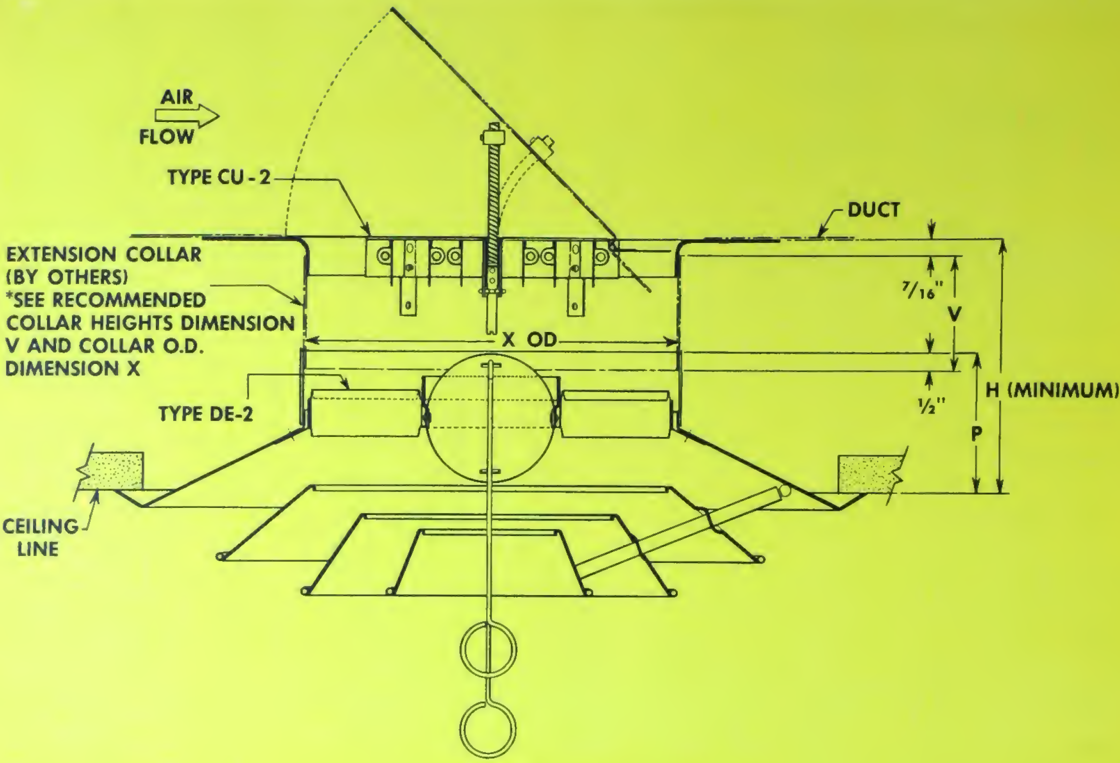
SIZE	NECK AREA	APPLICATION	SETTING OF DE-2 CENT. DISK	RATING	1000	1100	1200	1300	1400	1500	1600	1800	2000	2200	2400
				db →	38		43			50		57			65
					NECK VELOCITY *(in feet per minute)*										
25	sq. in.			Capacity in cfm	545	600	655	710	765	820	870	980	1090	1200	1310
10"	78.54	Heating	Open	Static pressure in. wg	.007	.008	.010	.011	.012	.014	.016	.020	.025	.030	.035
neck diam				Min.—max. rad. diff.	8-13	9-14	9-15	10-17	11-18	12-20	12-21	14-23	15-25	17-28	19-31
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.061	.074	.088	.103	.120	.138	.157	.200	.247	.300	.360
	.545			Min.—max. rad. diff.	9-15	10-17	11-18	12-20	12-21	13-22	14-23	16-26	18-28	19-31	21-31
30	sq. in.			Capacity in cfm	785	865	940	1020	1100	1180	1260	1410	1570	1730	1880
12"	113.10	Heating	Open	Static pressure in. wg	.018	.021	.025	.030	.034	.040	.045	.057	.070	.085	.101
neck diam				Min.—max. rad. diff.	9-15	10-17	11-18	12-20	13-22	14-23	15-25	16-26	18-29	20-33	22-36
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.064	.078	.093	.108	.125	.145	.165	.210	.259	.312	.374
	.785			Min.—max. rad. diff.	11-18	12-20	13-22	14-23	15-25	16-27	17-28	19-31	21-35	24-40	26-43
37.5	sq. in.			Capacity in cfm	1230	1350	1470	1600	1720	1840	1960	2210	2450	2700	2940
15"	176.7	Heating	Open	Static pressure in. wg	.021	.026	.031	.036	.042	.048	.055	.070	.086	.105	.125
neck diam				Min.—max. rad. diff.	12-20	13-22	15-24	16-26	17-28	18-30	20-33	22-36	24-40	27-44	29-48
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.067	.082	.098	.115	.133	.153	.175	.223	.279	.338	.401
	1.227			Min.—max. rad. diff.	14-23	15-25	17-28	18-30	19-31	20-33	22-36	24-40	27-44	30-49	33-55
45	sq. in.			Capacity in cfm	1770	1940	2120	2300	2470	2650	2830	3180	3530	3890	4240
18"	254.47	Heating	Open	Static pressure in. wg	.026	.031	.037	.047	.048	.055	.062	.079	.098	.121	.142
neck diam				Min.—max. rad. diff.	14-23	15-25	17-27	18-30	19-31	21-34	22-36	25-41	28-46	31-51	33-55
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.072	.088	.105	.123	.143	.165	.188	.238	.295	.355	.425
	1.767			Min.—max. rad. diff.	16-26	17-28	18-30	20-33	22-36	23-38	25-41	27-44	31-51	34-56	37-61
52.5	sq. in.			Capacity in cfm	2400	2650	2890	3130	3370	3610	3850	4330	4810	5290	5770
21"	346.36	Heating	Open	Static pressure in. wg	.028	.034	.041	.048	.056	.064	.073	.093	.115	.139	.166
neck diam				Min.—max. rad. diff.	15-25	17-28	18-30	20-33	21-35	23-38	24-40	27-44	30-49	33-55	36-60
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.077	.093	.110	.130	.151	.175	.199	.253	.314	.381	.459
	2.405			Min.—max. rad. diff.	17-28	19-31	21-34	23-38	24-40	26-43	28-46	31-51	35-58	38-62	42-68
60	sq. in.			Capacity in cfm	3140	3460	3770	4080	4400	4710	5030	5650	6280	6910	7540
24"	452.39	Heating	Open	Static pressure in. wg	.032	.038	.046	.054	.063	.072	.082	.104	.129	.156	.185
neck diam				Min.—max. rad. diff.	17-28	18-30	20-33	22-36	23-38	25-41	27-45	30-49	33-55	37-61	40-66
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.081	.098	.116	.137	.159	.183	.209	.265	.330	.400	.480
	3.141			Min.—max. rad. diff.	19-31	20-33	22-36	24-40	26-43	28-46	30-50	34-56	38-63	41-67	45-74
75	sq. in.			Capacity in cfm	4910	5400	5890	6380	6870	7360	7850	8830	9820	10800	11780
30"	706.86	Heating	Open	Static pressure in. wg	.040	.048	.056	.066	.076	.087	.098	.126	.158	.194	.230
neck diam				Min.—max. rad. diff.	19-31	21-35	23-38	25-41	27-44	28-47	30-50	34-56	38-63	42-69	46-75
	sq. ft.	Cooling and Ventilating	Closed	Static pressure in. wg	.089	.109	.130	.152	.175	.203	.230	.295	.360	.440	.525
	4.908			Min.—max. rad. diff.	21-35	23-38	26-43	28-46	30-49	32-53	34-56	38-63	43-71	47-78	52-86

HOW TO USE THE RATING TABLE

1. Determine the supply air volume in cfm to be distributed by the Type HU-4 Anemostat Air Diffuser with DE-2 or DE-3 radial deflector. In addition, from Page 7, determine the maximum permissible noise level for the type of occupancy.
2. Follow down the sharp black line indicating the maximum permissible noise level until it intersects approximately the design cfm. Read across horizontally to the left for the size of the diffuser and neck diameter. Read vertically upwards for the neck velocity. In the square beside capacity is the static resistance for both horizontal and projection pattern, as well as the radius of diffusion for horizontal pattern.

   Example: A Size 45 Type HU-4 with DE-2 handling 2690 cfm at a 1500 fpm neck velocity will have a resistance of .055" H_2O with disc damper open (same for DE-3). For conventional heating, cooling or ventilating with horizontal pattern and disc damper closed, the resistance will be 0.164" H_2O.
3. Projection heating is only recommended where a warm blanket of air is required, such as over entrances to combat cold infiltration. Do not use in auditoriums or coliseums.

TYPE HU-4 with CU Combo Unit and DE-2



SIZE	H	P	V	X
25	6⅝	3 11/16	3	9⅞
30	7⅞	4 7/16	3½	11⅞
37.5	8⅛	4 7/16	3¾	14⅞
45	8⅞	4 11/16	4¼	17⅞
52.5	9⅝	5 15/16	3¾	20⅞
60	10½	6 5/16	4¼	23⅞
75	12 7/16	7¼	5¼	29⅞

All dimensions in inches.

RECOMMENDED INSTALLATION SEQUENCE

1. Fasten extension collar to Type CU with sheet metal screws.
2. Fasten assembly of Type CU and extension collar to ductwork with sheet metal screws. (For duct opening and bolt circle see dimension sheet, Page 36).
3. Remove inner assembly of Type HU-4 and fasten outer cone to extension collar with sheet metal screws.
4. Raise Type DE-2 unit into the neck of the outer cone and fasten DE-2 securely with sheet metal screws.
5. Reinstall inner assembly to outer cone.

Anemostat Air Diffuser for Unit Heaters

TYPES
HU-3
HU-4

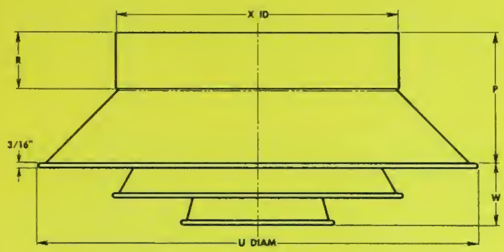
TYPE HU-3

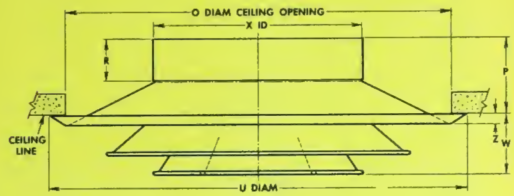
The Type HU-3 Anemostat Air Diffuser is recommended for use on projection unit heaters installed at levels from 15 ft. and up, where it is essential to project the heated air directly downward in order to insure its reaching the floor level.

This downward projection is accomplished by the steep design of the Type HU-3 cones and their relationship with each other.

TYPE HU-4

The Type HU-4 Anemostat Air Diffuser installed on a projection unit heater provides a broad diverging downward air pattern, resulting in draftless diffusion of the heated air over a maximum floor area. The unit is very effective under the most difficult conditions; for instance, wherever a heater is placed directly over occupants or equipment. It is recommended for mounting heights from 8 to 16 ft. above the floor level.





SIZE	P	R	U	W	X
25	4⅝	2	15⅜	2³⁄₁₆	10
30	5⅝	2	19⁵⁄₁₆	2¹¹⁄₁₆	12
37.5	6⁷⁄₁₆	2	24	3³⁄₁₆	15
45	6⁷⁄₁₆	2	27	3⅞	18
52.5	7¾	3	30⁹⁄₁₆	4	21
60	9¹¹⁄₁₆	3	37	5⁵⁄₁₆	24
75	10¾	3	45⁹⁄₁₆	6	30

All dimensions in inches.

SIZE	O	P	R	U	W	X	Z
25	18½	3¹¹⁄₁₆	2	20	2⅞	10	½
30	23	4⁷⁄₁₆	2	25	2⅞	12	½
37.5	26	4⁷⁄₁₆	2	28	3⅛	15	½
45	30	4¹¹⁄₁₆	2	32	3⁷⁄₁₆	18	½
52.5	33½	5¹⁵⁄₁₆	3	36	3¹³⁄₁₆	21	½
60	38½	6⁵⁄₁₆	3	42	4⁹⁄₁₆	24	¾
75	48	7¼	3	52	6⅛	30	¾

All dimensions in inches.

The radius of floor spread of the heated air at the floor level depends on the type of unit heater selected, the cfm, temperature differential, speed of the fan and the mounting height of the unit. These data must be obtained from the engineering information supplied by the unit heater manufacturer. The following unit heater manufacturers will assist in the selection of the proper type and size of diffuser: Airtherm, American Blower, Dunham, Fedders, ILG, McCord, McQuay, Modine, Nelson, Nesbitt, Rittling, Trane, UARCO and Young.

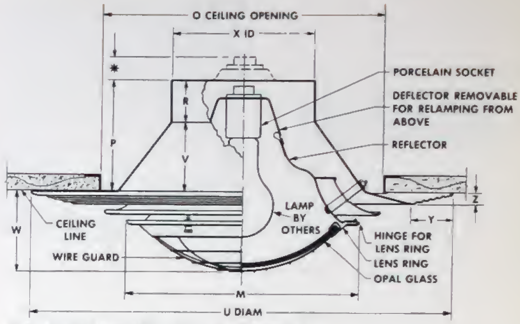
To equalize the air flow in the neck of Types HU-3 and HU-4 Anemostats, in combination with projection unit heaters, Type DE-3 Radial Deflectors should be used.

SPECIFICATION SUGGESTIONS

To assure improved distribution of air from unit heaters, it is important to specify that this equipment be furnished with Anemostat Air Diffusers.

To obtain the unit heaters with these diffusers, add to your unit heater specifications the following: "Each unit heater shall be equipped with a Type HU-3 or HU-4 Anemostat Air Diffuser and a DE-3 radial deflector. These shall be selected by the manufacturer to satisfy the distribution pattern required for the occupied spaces being served."

TYPE
NL-1 Anemostat Air Diffuser



* PROJECTION ABOVE NECK IS 3/4" AND 2" RESPECTIVELY FOR SIZES NO. 15 AND NO. 20.

SIZE	M	O	P	R	U	V	W	X	Y	Z	WATT
15	10⅛	12	4	1	18	3	3⅜	6	1¾	½	100-150
20	12⅞	16	4½	1	24	3½	4	8	2½	1	150-200
25	15⅛	20	5½	1	30	4½	5⅜	10	2¾	1	200-300
30	17¾	24	7½	2	36	5½	6¼	12	3⅛	1	300-500
35	17¾	28	8½	2	42	6½	6¼	14	3⅛	1	300-500
40	17¾	32	9½	2	45	7½	6¼	16	3⅛	1	300-500

All dimensions in inches.

The Type NL-1 Anemostat Air Diffuser is a combination air supply outlet and built-in lighting fixture. The outer air diffuser section consists of three or four flaring members, depending on the size. The largest member has a fluted edge. The lighting fixture is built into the center of the device, projecting slightly and thereby giving maximum light efficiency.

The Type NL-1 is installed with the fluted edge fitting tightly against the finished ceiling. It is not recommended for installation on exposed ductwork where the finished appearance is a factor.

Sizes 15, 20 and 25 supplied with medium base sockets. Sizes 30, 35 & 40 with mogul base sockets. All sockets have ½" cap for conduit or BX.

Type NL-1 is supplied with a standard sprayed aluminum prime finish.

SIZE	NECK AREA	RATING	700	800	900	1000	1100	1200	1300	1400	1500
db →						30			36		43
15	sq. in. 21.74	Capacity in cfm	105	120	135	150	165	180	195	210	230
6″	sq. ft. .151	Static pressure in. wg	.010	.014	.018	.022	.026	.031	.036	.041	.047
neck diam		Min.—max. rad. diff.	3-7	4-8	4-9	5-9	5-10	5-11	6-12	6-12	7-13
20	sq. in. 38.45	Capacity in cfm	185	215	240	265	295	320	345	375	400
8″	sq. ft. .267	Static pressure in. wg	.011	.015	.019	.023	.027	.032	.037	.043	.049
neck diam		Min.—max. rad. diff.	4-9	5-10	5-11	6-12	6-13	7-14	8-15	8-16	9-17
25	sq. in. 68.11	Capacity in cfm	330	380	425	475	520	570	615	660	710
10″	sq. ft. .473	Static pressure in. wg	.012	.016	.020	.024	.029	.034	.039	.045	.052
neck diam		Min.—max. rad. diff.	5-10	6-12	7-13	8-15	8-16	9-18	10-20	11-22	12-23
30	sq. in. 103.97	Capacity in cfm	505	580	650	720	795	865	940	1010	1080
12″	sq. ft. .722	Static pressure in. wg	.010	.014	.017	.022	.026	.032	.037	.043	.050
neck diam		Min.—max. rad. diff.	6-12	7-14	8-16	9-18	10-20	11-21	11-22	12-23	13-24
35	sq. in. 153.94	Capacity in cfm	750	855	960	1070	1180	1280	1390	1500	1600
14″	sq. ft. 1.069	Static pressure in. wg	.007	.010	.013	.016	.020	.024	.028	.032	.036
neck diam		Min.—max. rad.diff.	7-15	9-18	10-20	11-22	12-24	13-26	14-27	15-29	16-30
40	sq. in. 201.02	Capacity in cfm	975	1120	1260	1400	1540	1680	1820	1950	2090
16″	sq. ft. 1.396	Static pressure in. wg	.006	.007	.011	.013	.016	.019	.022	.026	.030
neck diam		Min.—max. rad. diff.	9-19	10-20	11-22	13-25	14-28	15-29	17-32	18-33	19-35

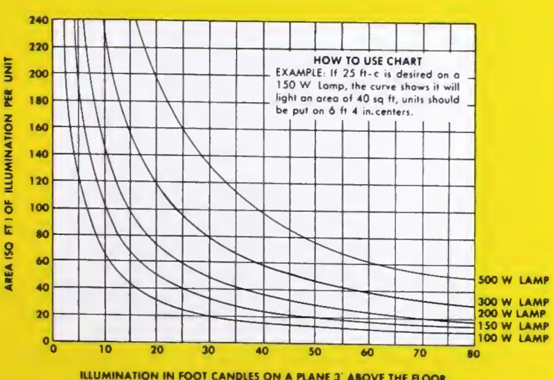
NECK VELOCITY (*In feet per minute*)

db ↓ 50

HOW TO USE THE RATING TABLE

1. After selecting the sound level value to be designed for as described on Page 7 determine the air volume in cfm to be distributed by the Type NL-1 Anemostat Air Diffuser.
2. Select the sound level working range at the top of the chart and follow down the stepped sharp black line selecting the diffuser, as determined by the capacity and radius of diffusion.
3. Follow the row of the correct capacity to the left to find the proper size number and neck diameter in the first column.
4. The corresponding static pressure resistance in in. wg is listed below the capacity.
5. The correct minimum and maximum radii of diffusion are listed below the static pressure resistance for the respective size and neck velocity.
6. Should the required radius of diffusion be below the minimum or above the maximum listed, contact your local Anemostat Sales Engineer.

LIGHTING



After a number of proper size Type NL-1 Anemostats have been selected for the air distribution, the installation must be checked for the illumination requirements as follows:

From the Illumination Chart determine the number of lighting units that will be needed to provide the required foot candles of illumination. Select the wattage to be used in each fixture according to the information given under dimension data. Follow the wattage curve on the illumination chart to the number of foot candles of illumination required. Read horizontally to the left to find the area each unit will illuminate. The square root of this area will determine the distance on centers that a lighting fixture should be located.

The Illumination Chart has been compiled for ceiling heights of 10 feet to 14 feet, and for white or light colored walls, ceilings and furnishings. Conditions which vary materially from the above, require special calculation in order to determine the number of lighting units to be used. If one Type NL-1 Anemostat will handle the air distribution for the room, it may require two or more lighting units without the Anemostat Air Diffuser to supply the desired illumination.

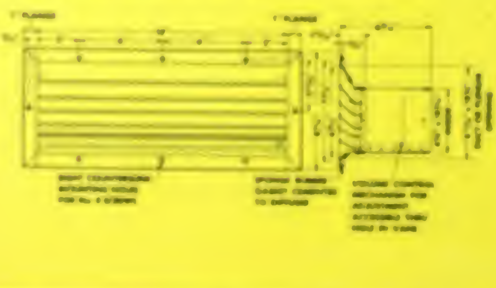
TYPE SL AND SLW

Anemostat Air Diffuser

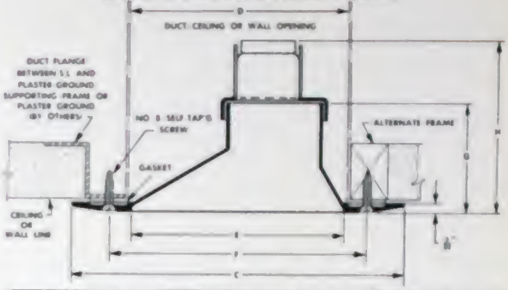
3½" and 6½" SIZE

6¼" and 12" SIZE

TYPE SLW—WALL INSTALLATION ONLY

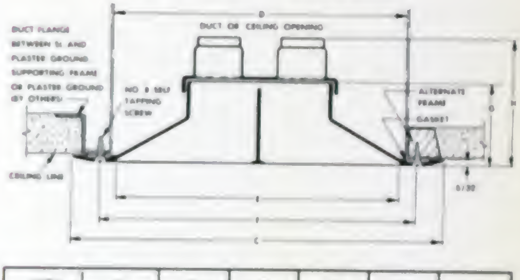


3½ and 6½" SIZE
ONE DIRECTIONAL FLOW



SIZE	C	D	E	F	G	H
3½"	5½	3⅝	3½	4¼	1 13/16	2 13/16
6½"	8½	6⅝	6½	7¼	2 7/16	3 3/16

6¼" and 12" SIZE
TWO DIRECTIONAL FLOW



SIZE	C	D	E	F	G	H
6¼"	8 3/16	6⅜	6¼	6 13/16	1 13/16	2 13/16
12"	14	12 3/16	12	12¾	2 7/16	3 3/16

The straight line diffusers are aspirating vane-type outlets of steel to be used as separate units or as continuous strips. They must not be used on exposed ductwork or on the bottom of soffits.

Correct performance is obtained when the units are installed in plenum-type ducts with the plenum fed from branches to keep the velocity in the plenum at approximately 600 fpm.

This unit is suitable for heating, ventilating and cooling when installed in the ceiling or side walls. It can also be used under windows or in baseboards for heating. Because of its aspiration characteristic, it draws cold air from the window or walls, and mixes it with the warm supply air.

Special lengths and types of units are also available for use with lighting fixtures, and for combination supply and return outlets. For these applications consult your local Anemostat Sales Engineer.

SIZE		CEILING MOUNTED						WALL MOUNTED					
	db ———►	30		36	43	50	57	30		36	43	50	57
SIZE	CAPACITY IN CFM PER LINEAR FOOT	20	40	60	80	100	120	20	40	60	80	100	120
3½ x 24	Capacity in cfm	40	80	120	160	200	240	40	80	120	160	200	240
	Static pressure in. wg	.015	.065	.145	.26	.41	.59	.015	.065	.145	.26	.41	.59
	Min.—max. Diffusion Distance — Forward	7-9	9-11	11-14	14-18	16-20	17-21	5-7	7-9	9-11	10-12	12-14	13-16
	Min.—max. Diffusion Distance — Spread	4-6	5-7	6-8	6-8	6-9	6-9	6-8	8-10	10-13	11-14	12-15	12-16
3½ x 36	Capacity in cfm	60	120	180	240	300	360	60	120	180	240	300	360
	Static pressure in. wg	.016	.062	.14	.25	.39	.56	.016	.062	.14	.25	.39	.56
	Min.—max. Diffusion Distance — Forward	8-10	11-14	14-17	16-20	18-23	20-25	6-7	8-10	10-13	12-15	13-16	14-17
	Min.—max. Diffusion Distance — Spread	5-7	6-8	7-10	7-10	8-11	8-11	9-12	11-14	12-15	13-16	14-17	14-18
3½ x 48	Capacity in cfm	80	160	240	320	400	480	80	160	240	320	400	480
	Static pressure in. wg	.017	.068	.15	.27	.43	.62	.017	.068	.15	.27	.43	.62
	Min.—max. Diffusion Distance — Forward	9-11	13-16	15-19	18-23	22-28	25-30	7-9	9-11	11-14	13-16	15-19	16-20
	Min.—max. Diffusion Distance — Spread	6-9	7-10	8-11	9-12	9-13	10-14	12-16	13-17	14-18	15-19	16-20	16-21
3½ x 60	Capacity in cfm	100	200	300	400	500	600	100	200	300	400	500	600
	Static pressure in. wg	.018	.072	.16	.29	.45	.64	.018	.072	.16	.29	.45	.64
	Min.—max. Diffusion Distance — Forward	10-13	14-17	18-22	21-26	24-29	27-33	8-11	10-13	13-16	15-19	17-22	18-23
	Min.—max. Diffusion Distance — Spread	8-11	10-13	11-14	12-15	12-16	13-17	14-18	15-19	16-20	16-21	17-21	17-22
3½ x 72	Capacity in cfm	120	240	360	480	600	720	120	240	360	480	600	720
	Static pressure in. wg	.019	.075	.17	.3	.465	.67	.019	.075	.17	.3	.465	.67
	Min.—max. Diffusion Distance — Forward	11-14	15-19	19-23	23-29	26-31	29-35	8-12	11-14	13-16	16-19	17-22	19-24
	Min.—max. Diffusion Distance — Spread	10-13	12-15	13-17	14-19	15-19	16-20	16-20	16-20	17-20	17-21	18-21	18-22

Spread is the ultimate total width of air pattern measured at the minimum (for maximum spread) and the maximum (for minimum spread) forward diffusion. For ceiling heights over 10 feet deduct "ceiling height minus 10 feet" from diffusion figures shown. When a continuous row of SL outlets are butted together, use the 72" table for performance purposes.

SIZE		CEILING MOUNTED						WALL MOUNTED					
	db ———►	30		36	43	50	57	30		36	43	50	57
SIZE	CAPACITY IN CFM PER LINEAR FOOT	50	75	100	125	150	175	50	75	100	125	150	175
6½ x 24	Capacity in cfm	100	150	200	250	300	350	100	150	200	250	300	350
	Static pressure in. wg	.042	.093	.165	.26	.37	.5	.042	.093	.165	.26	.37	.5
	Min.—max. Diffusion Distance — Forward	10-14	13-17	15-19	18-22	20-24	22-26	6-8	7-9	8-11	9-12	10-14	11-15
	Min.—max. Diffusion Distance — Spread	8-12	9-13	10-14	10-14	11-15	11-15	10-14	13-15	15-18	16-20	17-20	17-21
6½ x 36	Capacity in cfm	150	225	300	375	450	525	150	225	300	375	450	525
	Static pressure in. wg	.04	.09	.16	.25	.36	.49	.04	.09	.16	.25	.36	.49
	Min.—max. Diffusion Distance — Forward	13-17	16-20	19-23	22-26	24-28	26-30	7-9	9-12	10-14	11-15	13-17	15-20
	Min.—max. Diffusion Distance — Spread	10-14	11-15	12-15	12-16	13-17	13-17	14-18	16-20	18-21	19-22	19-23	19-23
6½ x 48	Capacity in cfm	200	300	400	500	600	700	200	300	400	500	600	700
	Static pressure in. wg	.043	.098	.174	.27	.39	.53	.043	.098	.174	.27	.39	.53
	Min.—max. Diffusion Distance — Forward	15-19	18-22	22-26	25-29	26-30	27-31	8-11	10-14	12-16	14-19	16-22	17-24
	Min.—max. Diffusion Distance — Spread	12-15	12-16	13-17	14-18	15-19	15-19	18-22	19-23	20-24	21-24	21-25	21-25
6½ x 60	Capacity in cfm	250	375	500	625	750	875	250	375	500	625	750	875
	Static pressure in. wg	.049	.11	.195	.31	.44	.6	.049	.11	.195	.31	.44	.6
	Min.—max. Diffusion Distance — Forward	17-21	21-25	24-28	26-30	27-31	28-32	9-12	10-14	13-17	15-20	16-22	18-25
	Min.—max. Diffusion Distance — Spread	14-18	15-19	16-19	16-20	17-21	17-21	20-24	21-25	22-25	22-26	23-26	23-27
6½ x 72	Capacity in cfm	300	450	600	750	900	1050	300	450	600	750	900	1050
	Static pressure in. wg	.06	.13	.24	.37	.53	.74	.06	.13	.24	.37	.53	.74
	Min.—max. Diffusion Distance — Forward	18-22	22-26	25-29	27-31	29-33	30-34	9-13	12-16	14-19	16-22	18-25	21-28
	Min.—max. Diffusion Distance — Spread	16-20	16-21	17-21	18-22	19-23	19-24	22-26	23-26	23-27	24-27	24-28	24-28

NOTE: FOR PERFORMANCE DATA OF THE 6¼" & 12" WIDTH TYPE SL ANEMOSTAT AIR DIFFUSER, TREAT EACH SIDE THE SAME AS A SINGLE WIDTH OF THE COMPARABLE SIZE MOUNTED IN THE CEILING.

SIZE		WALL MOUNTED								
	db ———► *				30		36		43	
6½ x 18 SLW	Capacity in cfm	150	200	250	300	350	400	450	500	550
	Static pressure in. wg	.01	.015	.025	.035	.05	.065	.085	.1	.125
	Min.—max. Diffusion Distance — Forward	5-8	7-12	9-15	11-18	13-20	14-23	16-26	18-29	20-32
	Min.—max. Diffusion Distance — Spread	6-9	7-10	8-11	9-12	10-13	10-14	11-15	12-16	13-17

* db values for SLW are with damper blades open. For partly closed at .125" static, noise is 39 db. At .2 in. wg noise is 45 db for all capacities.

TYPE SL AND SLW

How to Select

1. Determine the air volume in cfm to be distributed by the Straight Line Anemostat Air Diffusers and check whether air changes per hour are within recommended range, from Selection Guide on page 5.
2. Refer to page 7 to determine the maximum permissible noise level for the type of occupancy. From the performance data on page 29 determine the maximum cfm per lin ft. permissible to maintain the desired sound level (db), by reading down the sharp black line.
3. Tentatively determine the total lineal feet of Straight Line Air Diffusers required by dividing the total air volume (cfm) by the maximum recommended cfm per lin ft. determined from Step 2.
4. Divide space equally so that each section will be supplied by a diffuser not exceeding 6 ft. maximum length or divide total lin ft. of diffuser required (from Step 3) by maximum desired length of each Straight Line Anemostat Air Diffuser for each space and divide total space accordingly.

   If lengths of diffusers become excessive with size 3½", use size 6½". If architectural effect is desired, continuous lines can be used with dummy sections of the diffuser completely blanked off.
5. Determine length and total cfm of diffusers for each space. Divide total cfm by length (in feet) of diffuser to cross check whether cfm per lin ft. is within maximum permissible limits recommended from Step 2.
6. Refer to performance data under heading of CFM per lin ft. and find nearest capacity and size of diffuser decided upon from preceding paragraphs. Read static pressure resistance and minimum-maximum diffusion distances.

   Should diffusion distances be excessively below or above that required for space considered, find nearest diffusion distance on performance data that will apply and relocate and size diffusers on plan accordingly.
7. For ceiling heights over 10 ft. deduct "ceiling height minus 10 ft." from diffusion figures shown.

EXAMPLE.

Problem: A Banking Room, 60′ x 25′ x 12′ high, as shown in Fig. 1, is to be supplied with 2250 cfm for heating and comfort cooling. Straight Line Anemostat Air Diffusers are to be installed flush to ceiling.

Solution:

1. Divide the space into three sections 20′ x 25′ x 12′ high, each to be supplied with 750 cfm by a Straight Line Anemostat Air Diffuser at ceiling near long wall, between bays.

   Note: Ceiling should be flush and free of any projecting beams, etc. that would deflect air movement within area of diffusion of each unit.

   $$\text{Air changes per hour} = \frac{\text{cfm} \times 60}{\text{space, cu ft}} = \frac{750 \times 60}{20 \times 25 \times 12} = 7.5 \text{ air changes per hour}$$

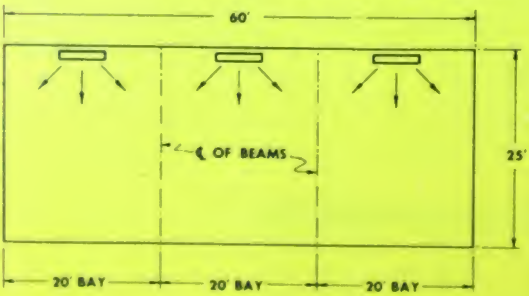


FIG. 1

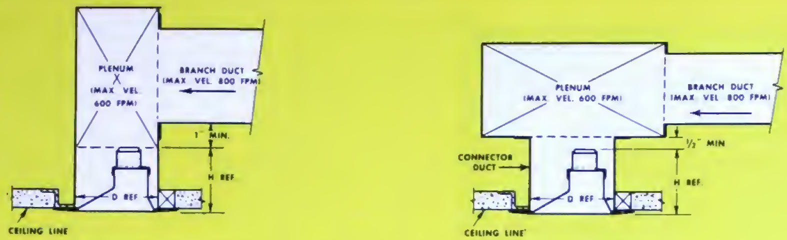
   The Selection Guide shows that this number of air changes is within the recommended range.
2. From page 7 the maximum permissible noise level for banking rooms is 47 db.

   Refer to performance data tables on page 29. The maximum permissible capacity is 90 cfm per lin ft. for the size 3½" SL and 135 cfm per lin ft. For the size 6½" SL the maximum available length of straight line diffuser is 6 feet. Therefore, for the required capacity of 750 cfm, the size 6½" SL is recommended for this application.

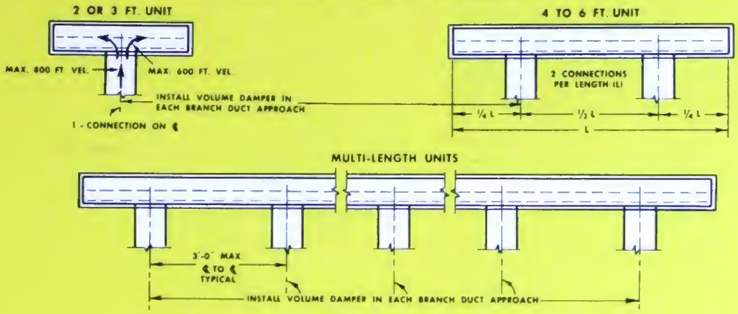
   According to the maximum cooling temperature differential data, the maximum cooling T.D. at 12 ft. mounting height is 17 F.
3. From performance data for 6½" SL, ceiling mounted, under heading of 125 cfm per lin ft. @ 43 db, read down vertically to required 750 cfm which indicates a size 6½" x 72" will supply required capacity with a static pressure resistance of .37" wg and a diffusion distance ranging from 27′ to 31′ forward and 18′ to 22′ spread.

   These diffusion ratings are based on 10′ ceiling heights and since the problem gives ceiling height as 12 ft., deduct "Ceiling Height Minus 10 ft." from diffusion figures shown. Therefore, diffusion distance will range from 25′ to 29′ forward and from 16′ to 20′ spread. Since the distance from diffusers to opposite wall is 25 ft. and the three 6½" x 72" units are located in the center of 20 ft. bays, the diffusion pattern is satisfactory.

   For wall mounted Straight Line Diffusers, selection procedure is same as shown above for ceiling mounted.



SECTIONS SHOWING TYPICAL PLENUM AND BRANCH DUCT CONNECTIONS



PLAN VIEWS SHOWING BRANCH SUPPLY ARRANGEMENTS

IMPORTANT NOTE:

The Unit Equalizing Deflectors furnished with the Straight Line Units are intended solely for adjustment of the unit discharge air pattern.

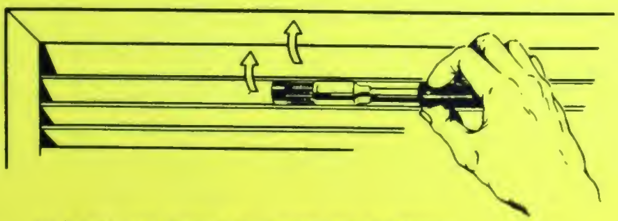
It is recommended that volume control to the units be provided for by duct and volume damper designs which will maintain resistances equal to the static pressure ratings and within the sound level ratings of the unit capacities as selected.

HOW TO DETERMINE THE CAPACITY OF STRAIGHT LINE DIFFUSERS

The capacity per lineal foot of type SL Diffuser is obtained by taking velocity readings in the second air flow passage in the direction of air delivery (as shown in sketch below) at approximately six inch intervals, midway between fixing stays, but not between outer fixing stays and end plates.

This average velocity when multiplied by factors shown below give capacity (cfm) per lineal foot. For total capacity of unit, multiply cfm per lineal foot by total length (in feet) of SL Diffuser.

Care should be taken that the probe of the Anemotherm Air Meter is held parallel to the vanes and is inserted into the passageway as far as possible, with the serial number facing the air stream, while making the traverse.



3½" single and double (6¼") width type SL Diffuser

Factor = .055
Cfm per foot = average velocity × .055
Total cfm = cfm per foot × length in feet

Note: For 6¼" SL total capacity (both sides) multiply total cfm × 2

6½" single and double (12") width type SL Diffuser

Factor = .088
Cfm per foot = average velocity × .088
Total cfm = cfm per foot × length in feet

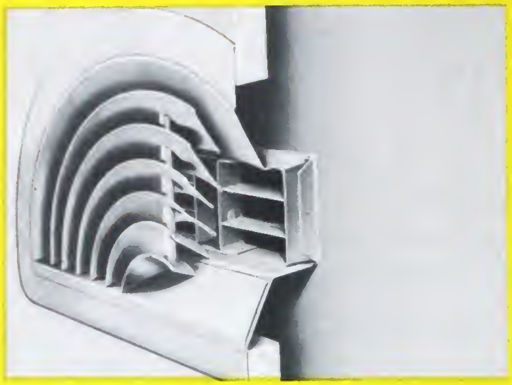
Note: For 12" SL total capacity (both sides) multiply total cfm × 2

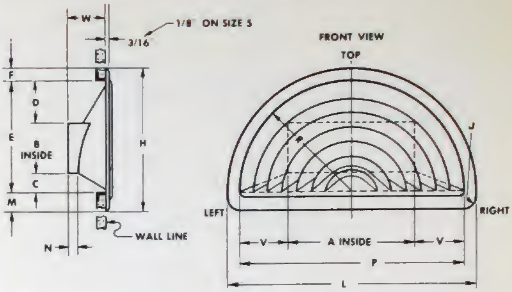
Type SLW Straight Line Diffuser

Factor = .3
Cfm per foot = average velocity × .3
Total cfm = cfm per foot × length in feet

TYPE
W
AND W-13

Anemostat Air Diffuser





TYPE W															
SIZE	A	B	C	D	E	F	J	H	L	M	N	P	R	V	W
5	3¼	1¼	9/16	1⅛	2 15/16	7/16	⅜	3⅞	6¾	½	5/16	5⅞	2 15/16	1 5/16	1¼
7.5	4⅜	1¾	⅝	1 13/16	4 3/16	9/16	½	5½	9½	¾	¼	8⅜	4 3/16	2	1⅛
10	6	2½	13/16	2 3/16	5½	1	1	8	13	1½	⅜	11	5½	2½	1 9/16
12.5	7	3	1	2 13/16	6 13/16	1 3/16	1	9½	16	1½	⅜	13⅝	6 13/16	3 5/16	1 15/16
15	8¾	3¾	1 3/16	3 5/16	8¼	1¼	1	11	19	1½	⅝	16½	8¼	3⅞	2 9/16
17.5	9½	4½	1½	3½	9½	1	1	12	21	1½	⅜	19	9½	4¾	2¾
20	12	5	1 9/16	4 5/16	10⅞	1⅛	1	13½	24	1½	⅝	21¾	10⅞	4⅞	3⅛
25	15½	6	1⅞	5⅝	13½	1	1	16	29	1½	1¼	27	13½	5¾	4 3/16
30	18	7	2 5/16	6 15/16	16¼	1¼	1	19	35	1½	1	32½	16¼	7¼	4¾
35	22	8½	2½	7⅞	18⅞	1⅛	1	21½	40	1½	1 11/16	37¾	18⅞	7⅞	5⅞
40	24	9½	2 13/16	9⅛	21 7/16	1 1/16	1	24	45	1½	1¾	42⅞	21 7/16	9 7/16	6⅜

All dimensions in inches

The Type W Anemostat Air Diffuser is an air supply outlet consisting of a series of semi-conical members used for heating, ventilating and cooling. It is primarily designed for installation in or parallel to the wall, but may also be located in the ceiling.

The Type W-13 is for ceiling applications. It includes a Baffle over the 2 inner cones. For proper functioning in ceiling a horizontal WED or a WSD must be ordered with a W-13. In wall installations, a minimum distance of one foot should be kept between the top of the device and the ceiling. Wherever possible, this distance should be increased.

Exhaust or return grilles in enclosures equipped with the Type W should be placed near the floor in outside or exposed walls.

In the case of flush to ceiling installations, the straight edge of the Type W-13 should be at least six inches from the wall.

Type WED Equalizing Deflectors must be used with the Type W Anemostat Air Diffuser.

Volume control of the Type W Anemostat Air Diffuser may be accomplished with the Type WSD Splitter Damper for sizes 12.5-15-17.5 and 20.

The Type W and W-13 should not be used on the bottom of exposed ducts.

Performance Data

db → 30 36 43 50

SIZE	NECK AREA	RATING	NECK VELOCITY (in feet per minute) 700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500
5	sq. in.	Capacity in cfm	20	22	25	28	31	34	36	39	42	45	48	50	53	56	70
3¼"x1¼"	4.06	Static pressure in. wg	.009	.011	.014	.017	.02	.023	.027	.031	.035	.04	.045	.048	.053	.058	.086
width x height	sq. ft.	Min.—max. rad. diff.*	2-4	2-4	2-4	3-5	3-5	3-6	3-6	4-7	4-8	4-8	4-8	5-9	5-9	5-10	7-13
neck diam	.028	Sideward	2-3	2-3	2-4	2-4	2-4	3-4	3-5	3-6	3-6	4-7	4-7	4-8	4-8	4-8	6-11
7.5	sq. in.	Capacity in cfm	37	42	48	53	58	64	69	74	80	85	90	95	100	105	135
4⅜"x1¾"	7.66	Static pressure in. wg	.01	.012	.015	.018	.022	.025	.029	.033	.038	.042	.048	.053	.059	.063	.094
width x height	sq. ft.	Min.—max. rad. diff.*	2-4	3-5	3-6	3-6	4-7	4-8	4-8	5-9	5-9	5-10	6-11	6-12	6-12	7-13	9-17
neck diam	.053	Sideward	2-3	2-4	2-4	2-4	3-5	3-5	3-6	4-7	4-7	4-8	4-8	5-9	5-10	6-11	7-13
10	sq. in.	Capacity in cfm	73	83	94	105	115	125	135	145	155	165	175	185	200	210	260
6"x2½"	15.0	Static pressure in. wg	.011	.013	.017	.02	.024	.027	.031	.036	.04	.045	.051	.056	.062	.068	.10
width x height	sq. ft.	Min.—max. rad. diff.*	3-6	4-6	4-7	4-8	5-9	5-10	6-11	6-12	7-13	7-14	7-15	8-16	9-17	9-18	11-21
neck diam	.104	Sideward	2-4	3-5	3-6	3-6	4-7	4-8	5-9	5-10	5-11	6-12	6-12	7-13	7-14	8-15	9-17
12.5	sq. in.	Capacity in cfm	100	115	131	145	160	175	190	205	220	235	250	265	275	290	365
7"x3"	21.0	Static pressure in. wg	.012	.014	.018	.021	.025	.029	.033	.038	.043	.048	.054	.06	.066	.072	.106
width x height	sq. ft.	Min.—max. rad. diff.*	4-7	4-8	5-9	5-10	6-11	6-12	7-13	7-14	8-15	8-16	9-17	9-18	10-19	10-20	13-24
neck diam	.146	Sideward	3-6	3-6	4-7	4-8	5-9	5-10	6-11	6-12	7-13	7-14	8-15	8-15	8-16	9-17	11-21
15	sq. in.	Capacity in cfm	160	180	205	230	250	275	295	320	340	365	390	410	435	455	570
8¾"x3¾"	32.81	Static pressure in. wg	.012	.015	.019	.023	.027	.031	.035	.04	.046	.051	.057	.063	.069	.076	.112
width x height	sq. ft.	Min.—max. rad. diff.*	4-8	5-9	6-11	6-12	7-13	7-14	8-16	9-17	9-18	10-19	10-20	11-21	12-22	12-23	15-28
neck diam	.228	Sideward	3-6	4-8	5-9	5-10	6-11	6-12	7-13	7-14	8-15	8-16	9-17	9-18	10-19	10-20	12-22
17.5	sq. in.	Capacity in cfm	210	240	265	295	325	355	385	415	445	475	505	535	565	595	745
9½"x4½"	42.75	Static pressure in. wg	.013	.016	.02	.024	.028	.033	.037	.042	.048	.054	.06	.066	.073	.08	.118
width x height	sq. ft.	Min.—max. rad. diff.*	5-9	6-11	6-12	7-13	7-14	8-16	9-17	10-18	10-19	11-20	11-21	12-23	13-24	14-25	17-32
neck diam	.297	Sideward	4-8	5-9	5-10	6-11	6-12	7-13	7-14	8-15	8-16	9-17	10-18	10-19	11-20	11-21	14-26
20	sq. in.	Capacity in cfm	290	335	375	415	460	500	540	585	625	665	710	750	790	835	1040
12"x5"	60.0	Static pressure in. wg	.014	.017	.021	.026	.03	.035	.04	.045	.051	.058	.064	.071	.078	.085	.125
width x height	sq. ft.	Min.—max. rad. diff.*	5-9	6-11	7-13	8-15	9-17	9-18	10-19	11-21	12-22	13-24	14-26	14-27	15-28	16-30	20-38
neck diam	.417	Sideward	4-9	5-10	6-11	7-12	7-13	8-14	8-15	9-17	10-19	11-20	11-21	12-23	13-24	13-25	16-30
25	sq. in.	Capacity in cfm	450	515	580	645	710	775	840	905	970	1040	1100	1160	1230	1290	1620
15½"x6"	93.0	Static pressure in. wg	.015	.019	.023	.028	.033	.038	.044	.049	.055	.062	.069	.077	.085	.093	.137
width x height	sq. ft.	Min.—max. rad. diff.*	6-11	7-13	8-15	9-17	10-18	11-21	12-23	13-25	14-27	15-29	16-31	17-32	18-34	19-35	24-45
neck diam	.646	Sideward	5-10	6-12	7-13	7-14	8-15	9-17	10-19	11-21	12-23	13-24	13-25	14-27	15-28	16-31	19-36
30	sq. in.	Capacity in cfm	615	700	790	875	965	1050	1140	1230	1310	1400	1490	1580	1660	1750	2190
18"x7"	126.0	Static pressure in. wg	.016	.012	.025	.03	.035	.041	.047	.053	.06	.067	.075	.083	.092	.100	.15
width x height	sq. ft.	Min.—max. rad. diff.*	7-13	8-15	9-17	10-19	11-21	12-24	14-26	15-29	16-31	17-33	18-35	19-36	20-38	21-39	26-48
neck diam	.875	Sideward	6-12	7-13	8-15	9-17	10-19	11-21	12-23	13-25	13-26	14-27	15-29	16-30	17-32	18-34	22-41
35	sq. in.	Capacity in cfm	910	1040	1170	1300	1430	1560	1690	1820	1950	2080	2210	2340	2470	2600	3250
22"x8½"	187.0	Static pressure in. wg	.018	.023	.028	.033	.039	.045	.051	.058	.066	.074	.082	.091	.101	.111	.165
width x height	sq. ft.	Min.—max. rad. diff.*	8-15	9-17	11-20	12-23	13-25	14-27	16-30	17-33	18-35	19-37	21-40	22-42	23-44	24-46	30-55
neck diam	1.299	Sideward	7-13	8-15	9-17	10-19	11-21	12-23	13-25	14-27	15-29	16-31	18-34	19-36	20-38	21-40	25-46
40	sq. in.	Capacity in cfm	1110	1270	1430	1580	1740	1900	2060	2220	2380	2530	2690	2850	3010	3170	3960
24"x9½"	228.0	Static pressure in. wg	.02	.025	.031	.037	.044	.051	.058	.066	.075	.084	.093	.103	.114	.125	.186
width x height	sq. ft.	Min.—max. rad. diff.*	9-17	10-19	12-22	13-24	14-27	15-29	17-32	18-34	19-37	20-39	22-41	23-44	25-47	26-49	32-58
neck diam	1.583	Sideward	8-15	9-17	10-19	11-21	12-23	13-25	14-27	15-29	16-31	17-33	18-35	19-37	21-40	22-42	27-48

db ↓ 57 65

* DENOTES FORWARD READINGS

HOW TO USE THE RATING TABLE

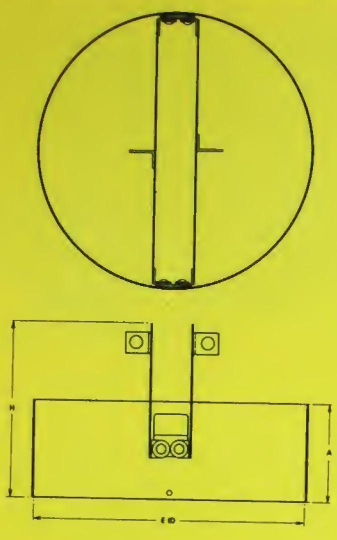
1. After selecting the sound level value to be designed for as described on Page 7 determine the air volume in cfm to be distributed by the Type W Anemostat Air Diffuser.
2. Select the sound level working range at the top of the chart and follow down the stepped sharp black line selecting the diffuser, as determined by the capacity and radius of diffusion.
3. Follow the row of the correct capacity to the left to find the proper size number and neck dimensions in the first column.
4. The corresponding static pressure resistance in in. wg is listed below the capacity.
5. The correct minimum and maximum sideward and forward radii of diffusion are listed below the static pressure resistance figures for the respective size and neck velocity. Should the required radii of diffusion be below the minimum or above the maximum listed, it is necessary to use a Type WED Equalizing Deflector for directional control. For complete information on the use of the Type WED Equalizing Deflector, see page 40.
6. In case of unusual location of Type W Anemostat Air Diffuser, consult your local Anemostat Sales Engineer.

Accessory Selection Guide

GROUP	TYPE	SIZES AVAILABLE	USED WITH ANEMOSTAT AIR DIFFUSER TYPE	PRIMARY FUNCTION	CORRECT INSTALLATION	SECONDARY FUNCTION	CORRECT INSTALLATION	REMARKS
EQUALIZING DEFLECTORS	ACED	15-60	AC	Equalization of supply airflow	At take-off or in neck	Directional and volume control	In neck	
	ED	10-95	All types, except AC, HU-3 and HU-4 on unit heaters, W, W-13 and SL	Equalization of airflow	At take-off	Directional control	In neck	For best performance 2 ED's are required: 1) at the take-off for equalization 2) in the neck for directional control
	WED Vertical Horizontal	7.5-40	W	Equalization of airflow	At take-off	Directional control	In neck	Frequently 2 WED's are required: 1) at the take-off for equalization 2) in the neck for directional control
RADIAL DEFLECTORS	DE-2	25-75	HU-4	Airflow Pattern Control	In neck	Equalization of airflow	In neck	Used in combination with ductwork installation only, requires use of ED at take-off for airflow equalization
	DE-3	25-75	HU-3, HU-4	Airflow Pattern Modulation (for heating only)	In neck	Equalization of airflow	In neck	Used in combination with ductwork installation for permanent pattern and on Unit Heaters.
DEFLECTOR	Blank-off Baffle	10-95	All types	Prevention of "splashing"	In bottom of neck			Order by Anemostat Air Diffuser Type & Size Number and Angle of sector to be blanked off
VOLUME CONTROLS	ACED	15-60	AC	Supply Volume Control	In neck	Directional Control	In neck	
	ACXD	15-60	AC	Extract Volume Control	In neck		In extract neck	
	CU-1 CU-2	10-60	All types except SL, W, AC, NL-1 and SLW	Volume Control	At take-off			ED furnished as integral part of unit
	WSD left-hinged right-hinged top-hinged bottom-hinged	12.5-20	W	Volume Control	In neck			
ACCESSORIES	Anti-Smudge rings and frames	10-60	Round units, except HU-3, HU-4, NL-1, SL and SLW	Reduce ceiling smudging	Between ceiling and diffuser			

Accessories for Type AC Anemostat

ACXD EXTRACT DAMPER

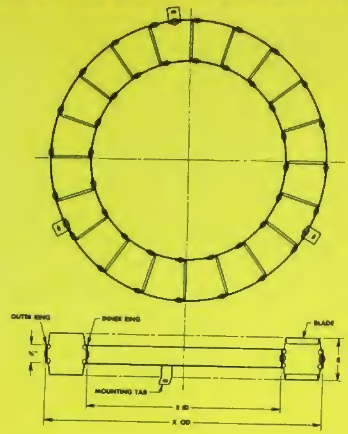


SIZE	A	E	H
15	2 7/16	4	3 3/16
20	2 5/8	5	3 13/16
25	2 13/16	6	4 7/16
30	2 13/16	8	5 3/16
35	3	9	5 13/16
40	3 1/4	10	6 7/16
45	3 1/4	12	7 3/16
50	3 1/2	13	7 11/16
60	3 5/8	16	9 3/16

All dimensions in inches.

The Type ACXD Extract Damper is used for controlling the extract volume of the Type AC. It is a manually set butterfly type damper installed in the extract neck.

ACED SUPPLY DAMPER-EQUALIZING DEFLECTOR

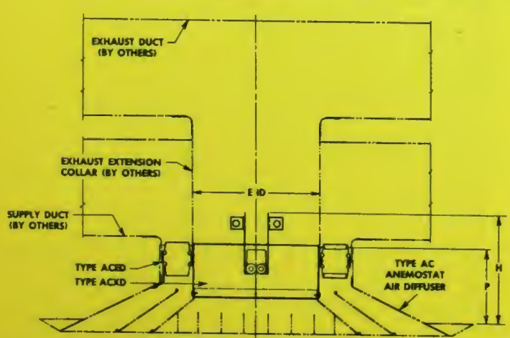


SIZE	B	E	X	NO. OF BLADES
15	1 1/4	*	5 3/4	16
20	1 1/4	*	7 3/4	18
25	1 3/4	6 1/4	9 3/4	18
30	1 3/4	8 1/4	11 3/4	20
35	2	9 1/4	13 3/4	20
40	2	10 1/4	15 3/4	24
45	2	12 1/4	17 3/4	28
50	2	13 1/4	19 3/4	30
60	2	16 1/4	23 3/4	32

All dimensions in inches.
* No inner ring required.

The Type ACED Supply Damper-Equalizing Deflector for the Type AC Anemostat Air Diffuser is used for supply air volume control as well as for the equalization of air flow and for directional control. The ACED affords a simple method of balancing the AC Anemostat Air Diffuser and equalizing the air flow by partially or entirely closing the individual blades. It is installed around the extract duct of the unit in the neck of the diffuser.

TYPE AC WITH ACED & ACXD FOR SUPPLY & EXHAUST VOLUME CONTROL



SIZE	H	P	E
15	4 1/2	3 9/16	4 1/16
20	5 1/4	3 7/8	5 1/16
25	6	4 3/16	6 1/16
30	7	4 1/2	8 1/16
35	7 3/4	4 11/16	9 1/16
40	8 1/2	5 5/16	10 1/16
45	9 3/4	5 3/4	12 1/16
50	10 1/4	5 7/8	13 1/16
60	12 1/4	6 1/4	16 1/16

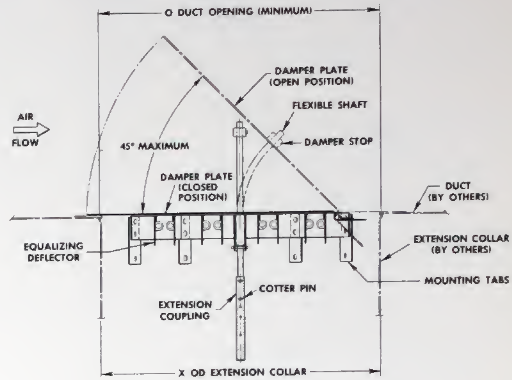
All dimensions in inches.

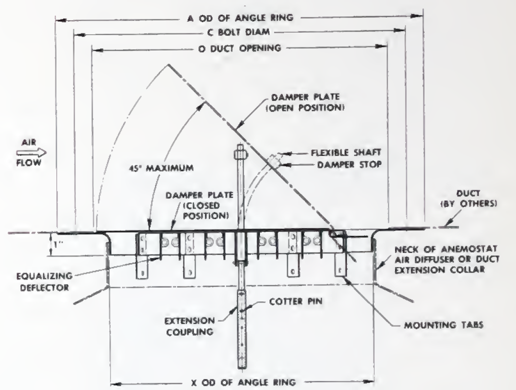
TYPE
CU Combo Unit

COMBO # 1

COMBO # 2

COMBO # 1





CAUTION—When establishing distance between finished ceiling line and bottom of duct, add 3/8" to "P" dimension given for all diffusers.

COMBO # 1

SIZE	O	X
10	4	3⅞
12.5	5	4⅞
15	6	5⅞
17.5	7	6⅞
20	8	7⅞
25	10	9⅞
30	12	11⅞
37.5	15	14⅞
45	18	17⅞
52.5	21	20⅞
60	24	23⅞

COMBO # 2

SIZE	A	C	O	X
10	8	6⅝	5¼	3⅞
12.5	8	7⅛	6¼	4⅞
15	10¾	9	7¼	5⅞
17.5	10¾	9½	8¼	6⅞
20	15½	12⅜	9¼	7⅞
25	15½	13⅜	11¼	9⅞
30	16½	14⅞	13¼	11⅞
37.5	19⅛	17¾	16¼	14⅞
45	22¼	20¾	19¼	17⅞
52.5	25¼	23¾	22¼	20⅞
60	28⅜	26¾	25⅜	23⅞

All dimensions in inches.

Combo Unit

TYPE CU

The Combo Units Types 1 and 2 are important labor-saving devices. The Combo No. 1 is a combination volume control and equalizing deflector which can be quickly installed in a take-off. The Combo No. 2 is the Combo No. 1 assembled inside an angle ring.

The Combo No. 1 can be installed in take-offs as the dimensions permit it to be inserted up through the nominal size duct take-offs or openings. The illustration on the opposite page shows a typical installation of the Combo #1 in a duct installation in which the contractor uses hammer-lock or clinch type connection instead of angle rings.

Each unit is provided with a special coupling, which enables the contractor to extend the volume control rod for any length take-off. The coupling can be cut and standard rod can be cut to the desired length and fastened into the sections of the couplings by cotter pins.

For close coupled jobs the same Combo Unit can be used for any type diffuser of the same size. The adjustable coupling allows the screw-driver actuated rod to be set for the step-down or flush type units.

The turning vane damper is adjusted for balancing by a screwdriver, which can engage the slotted end of the Combo adjusting coupling.

Contractors are stocking the standard sizes of these Combo Units because it enables them to complete the ducts and take-offs on rush jobs to permit the ceilings to be installed. This allows more time for the shipping of the diffusers which are installed when the ceiling is completed. Practical contractors estimate that these Combo Units reduce, by at least 50%, the accessory and volume control installation time.

The Combo Units can be used with all types of Anemostat Air Diffusers except the Type AC, SL, SLW, NL-1 and the Type W.

Easy, Quick Installation Combo #2

1

Cut Hole in Duct

2

Fasten Combo-Unit

3

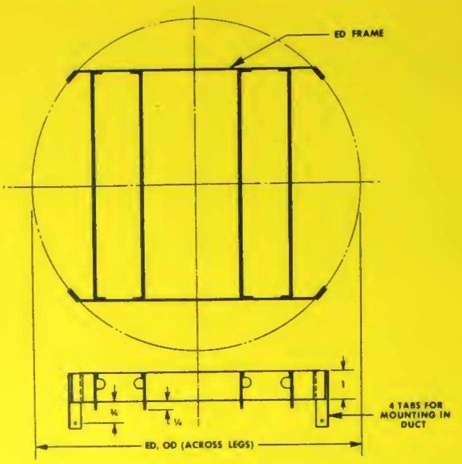
Fasten Take-Off and Air Diffuser or

4

Fasten Air Diffuser to the Combo

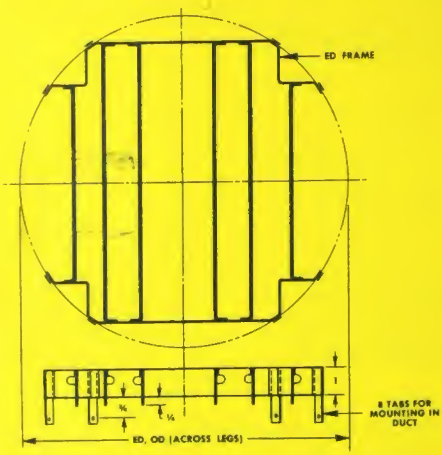
TYPE **ED**

Equalizing Deflector



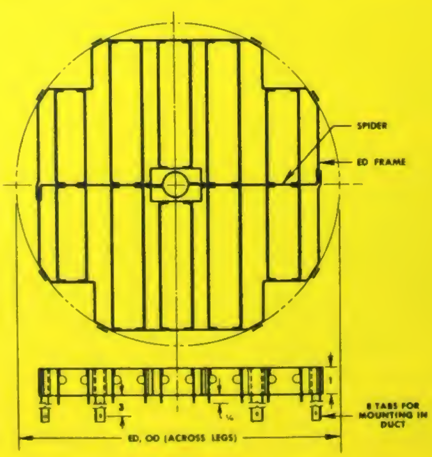
SIZE	ANEMOSTAT NECK DIAM (INSIDE)	E. D. DIAM (OUTSIDE)
10	4	3 9/16
12.5	5	4 9/16
15	6	5 9/16
17.5	7	6 9/16
20	8	7 9/16

All dimensions in inches



SIZE	ANEMOSTAT NECK DIAM (INSIDE)	E. D. DIAM (OUTSIDE)
25	10	9 9/16
30	12	11 9/16
37.5	15	14 1/2
45	18	17 1/2

All dimensions in inches



SIZE	ANEMOSTAT NECK DIAM (INSIDE)	E. D. DIAM (OUTSIDE)
52.5	21	20 1/2
60	24	23 1/2
75	30	29 1/2
95	38	37 1/2

All dimensions in inches

NOTE: HEIGHT OF FRAME 1", HEIGHT OF BLADE 1 1/4"

The Type ED Equalizing Deflector is used to both equalize the air flow down into the neck of the Anemostat Air Diffuser and to give directional control.

EQUALIZATION OF AIR FLOW

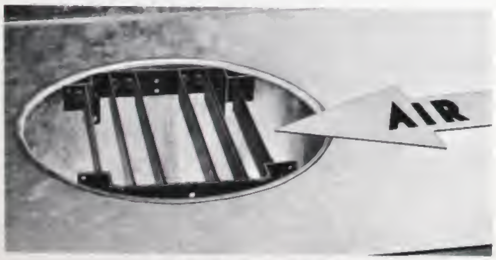
Due to the expanded cone design, Anemostat Air Diffusers have very little resistance. A Combo Unit Type CU should be used at the take-off to insure both equalized air flow down to the outlet as well as volume control. If a remote volume control is used, then an equalizing deflector Type ED is necessary to prevent one-sided air flow into the neck of the outlet. It should be placed with its top flush to the bottom of the supply duct with the beaded edge facing into the air stream and with the blades set at 90° to the air stream. Normally, when the blades are fully open, the air will be turned evenly down through the take-off. If even distribution is not readily achieved, then pinch off the blades where too much air is flowing, thus equalizing the air flow.

The smoke pictures on the right bear out the importance of having either a Combo Unit Type CU which has both volume control and Type ED equalizing deflector blades, or a plain ED where remote volume control is used. Without a Combo Unit or ED at the take-off (Picture 2), there is definitely one-sided air flow due to a pile up of air at the down stream side. In the next picture (Picture 3) operating under the same conditions of velocity and capacity, the air flow into the take-off is equalized by means of the ED, and objectionable high velocities and uneven flow are eliminated.

DIRECTIONAL CONTROL

In order to achieve directional control due to the shape of the room, or presence of a nearby obstruction, the ED is placed in the neck of the Anemostat Air Diffuser. For the average square room, no ED is required. However, if the room side dimensions are 1½ to 1, then one ED should be placed in the neck with the blades set to direct the air out in two directions along the long axis of the room. When the room side ratios are as great as 2 to 1, and two outlets (the ideal set-up) cannot be used, then two ED's are required, one above the other and at 90° to each other. The upper one should have its blades parallel to the long axis and turned in. The lower ED should be at right angles to this, with its blades set to direct most of the air out along the long axis of the room.

Care must be taken in such a case that the outlet be sufficiently large so as not to have excessive neck velocity. If the outlet selected is within 200 fpm of the maximum noise level limit, then the next larger outlet should be selected.



TYPICAL ED INSTALLATION

1

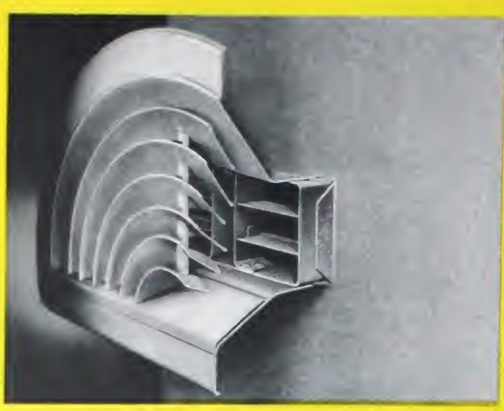
2

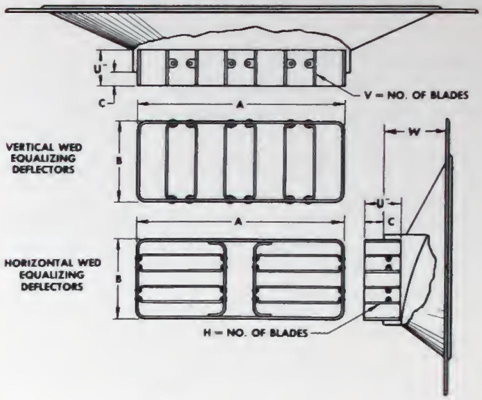
WITHOUT ED

3

WITH ED

TYPE WED Equalizing Deflector





Size	A	B	C	H	U	V	W
7.5	$4\frac{1}{8}$	$1\frac{1}{2}$	$\frac{1}{16}$	4	$\frac{5}{8}$	4	$1\frac{3}{16}$
10	$5\frac{3}{4}$	$2\frac{1}{4}$	$\frac{3}{8}$	4	$\frac{5}{8}$	6	$1\frac{9}{16}$
12.5	$6\frac{3}{4}$	$2\frac{3}{4}$	$\frac{5}{8}$	4	1	6	$1\frac{15}{16}$
15	$8\frac{1}{2}$	$3\frac{1}{2}$	$\frac{3}{8}$	4	1	8	$2\frac{9}{16}$
17.5	$9\frac{1}{4}$	$4\frac{1}{4}$	$\frac{7}{16}$	8	1	8	$2\frac{3}{4}$
20	$11\frac{3}{4}$	$4\frac{3}{4}$	$\frac{7}{16}$	8	1	10	$3\frac{1}{8}$
25	$15\frac{1}{4}$	$5\frac{3}{4}$	0	8	1	14	$4\frac{3}{16}$
30	$17\frac{3}{4}$	$6\frac{3}{4}$	$\frac{1}{8}$	12	1	16	$4\frac{3}{4}$
35	$21\frac{3}{4}$	$8\frac{1}{4}$	0	12	1	20	$5\frac{7}{8}$
40	$23\frac{3}{4}$	$9\frac{1}{4}$	0	16	1	22	$6\frac{3}{8}$

All dimensions in inches.

The Type WED Equalizing Deflector is used with the Type W Anemostat Air Diffusers for the equalization of air flow and directional control. Installation is made either in the neck of the unit or at the take-off, or in both locations. For selection of HORIZONTAL OR VERTICAL WED consult the tables on this page.

WE FURNISH VERTICAL TYPE WED UNLESS OTHERWISE SPECIFIED.

TABLE 1
FOR AIR FLOW EQUALIZATION

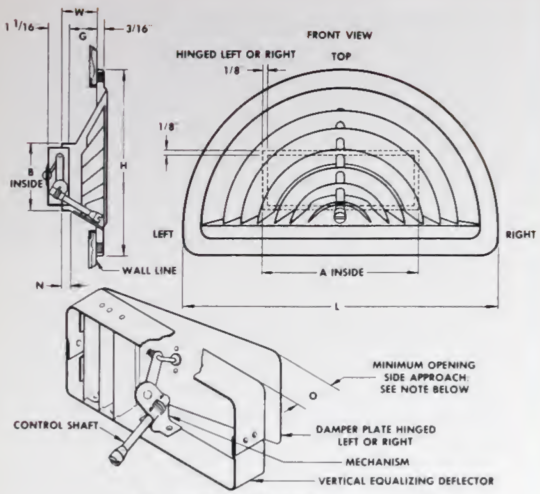
Direction of air approach	Type WED
From right or left	Vertical WED
From above or below	Horizontal WED

TABLE 2
FOR DIRECTIONAL CONTROL

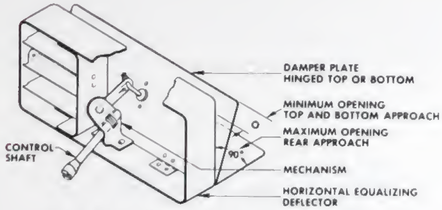
Objective	Type of WED in neck
Increase or decrease of sideward radius of diffusion	Vertical WED
Increase or decrease of foreward radius of diffusion	Horizontal WED
Draftless air distribution in all ceiling installations	Horizontal WED

Splitter Damper

TYPE WSD



NOTE: TO BE USED FOR SIDE AIR APPROACH ONLY



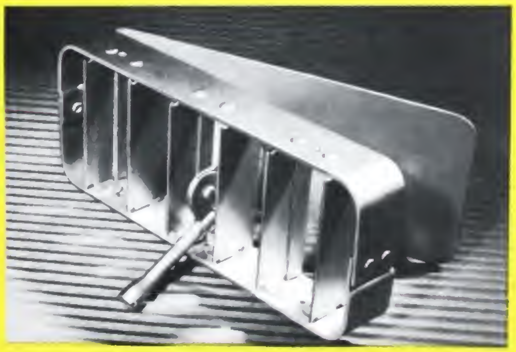
NOTE: TO BE USED FOR TOP, BOTTOM OR REAR AIR APPROACH ONLY

Size	A	B	G	H	L	N	O	W
12.5	7	3	1 5/16	9 1/2	16	3/8	2	1 15/16
15	8 3/4	3 3/4	1 11/16	11	19	5/8	2 1/2	2 9/16
17.5	9 1/2	4 1/2	1 15/16	12	21	3/8	3	2 3/4
20	12	5	2 1/4	13 1/2	24	5/8	3 1/2	3 1/8

All dimensions in inches.

The Type WSD Splitter Damper serves as a volume control with the Type W Anemostat Air Diffuser. It consists of a screw driver operated damper mounted directly on the WED. It is not necessary to order the WED separately nor can a second WED be used as the WSD must always be installed directly in the neck of the unit.

SELECT HINGING ACCORDING TO CHART



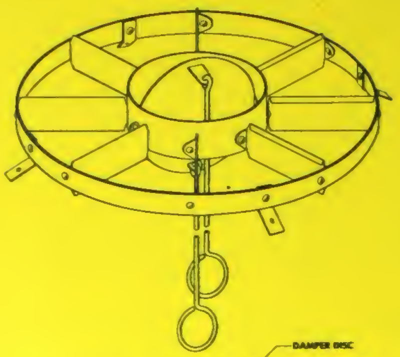
DIRECTION OF AIR APPROACH	*TYPE WSD*
From the right	Left-hinged
From the left	Right-hinged
From above	Bottom-hinged
From below	Top-hinged
From the rear	Bottom-hinged

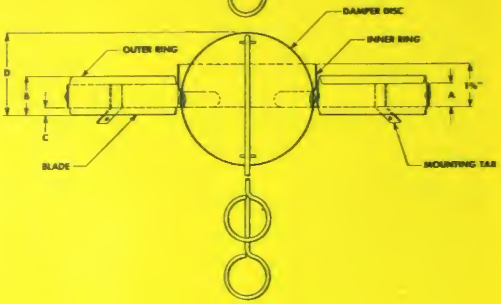
NOTE: The terms left and right, top and bottom refer to the Type W as seen from the room in its usual location in the wall.

TYPE DE

Radial Deflector

TYPE DE-2 RADIAL DEFLECTOR





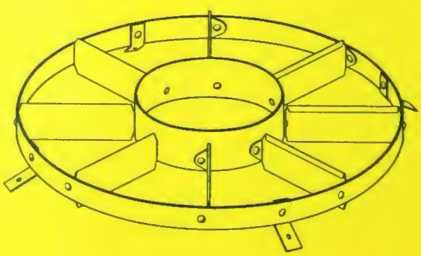
TYPE DE-2 RADIAL DEFLECTOR

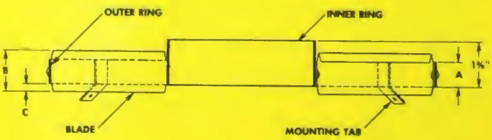
SIZE	NECK DIAM	OUTER RING O D	INNER RING I D	NO. OF BLADES	A	B	C	D
25	10	9¾	3⅝	8	¾	1¼	¼	2 3/16
30	12	11¾	4½	8	¾	1¼	¼	2⅝
37.5	15	14¾	5	10	¾	1¼	¼	2⅞
45	18	17¾	6	10	1	2	½	3⅝
52.5	21	20¾	7	10	1	2	½	4⅛
60	24	23¾	8	12	1	2	½	4⅝
75	30	29¾	10	14	1	2	½	5⅝

All dimensions in inches.

The DE-2 Radial Deflector is for use with the type HU-4 Anemostat Air Diffuser *only* and gives complete air pattern adjustability. It consists of a disc damper surrounded by flat radial blades. With the radial blades set at 45°, and damper fully opened, the air pattern is downward at 45°. When the damper is closed, the air pattern immediately becomes horizontal. Thus, the DE-2 allows the Type HU-4 Anemostat Air Diffuser to be used for heating, ventilating and with the horizontal pattern, limited cooling. This is ideal for use in industrial work where spot ventilation, heating, or cooling with easy pattern control is required. It should be noted that an ED at the duct take-off or a Combo Unit is a *must* for equalization of air flow due to the very low resistance of this outlet.

TYPE DE-3 RADIAL DEFLECTOR





TYPE DE-3 RADIAL DEFLECTOR

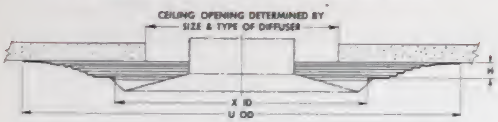
SIZE	NECK DIAM	OUTER RING O D	INNER RING I D	NO. OF BLADES	A	B	C
25	10	9¾	3⅝	8	¾	1¼	¼
30	12	11¾	4½	8	¾	1¼	¼
37.5	15	14¾	5	10	¾	1¼	¼
45	18	17¾	6	10	1	2	½
52.5	21	20¾	7	10	1	2	½
60	24	23¾	8	12	1	2	½
75	30	29¾	10	14	1	2	½

All dimensions in inches.

The DE-3 Radial Deflector is used to modulate the air flow pattern from vertically downward to a conical downward pattern when the HU-4 is installed on ductwork. It should always be installed on HU-3 and HU-4 outlets when used on unit heater applications to act as a contravane section and give good downward projection.

Anti-smudge Rings and Frames

ANTI-SMUDGE RINGS FOR CIRCULAR UNITS



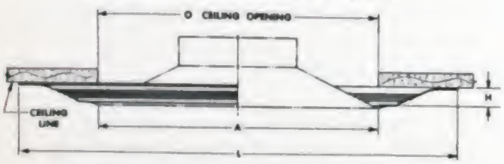
TYPES				SIZES		
AC	AR-3	C-2	CM-1	H	U	X
		12.5		5/8	18	10 1/4
			10-12.5 & 15	5/8	21	11 3/4
15		15		3/4	22	12 5/8
	15			7/8	25	14
20		20	20	1	29	16 1/2
	20			1 1/4	36	18 3/4
25		25		1 1/4	36	21
	25-30		25-30	1 1/4	39	22 3/4
30		30		1 1/2	44	25 3/8
35				1 3/4	49	30
	37.5			1 5/8	47	28 9/16
		37.5	37.5-45	1 7/8	54	32 7/8
40	45			2	56	34 1/2
45		45		2 1/4	60	38 3/4
50	52.5 - 60			2 1/4	66	43 1/2
		52.5 - 60		2 1/4	66	43 1/2
			52.5 - 60	2 1/4	72	45 7/8

All dimensions in inches.

Anti-smudge Rings and Frames are accessories developed for use with Anemostat Air Diffusers where minimum ceiling aging is the prerequisite. These patented decorative devices are scientifically designed to reduce the factors which cause "smudging".

When ordering, state size of diffusers with which the Rings or Frames are to be used. Outer edges of Anti-smudge Rings or Frames should fit tightly against the ceiling. Do not use gaskets as this upsets the function of the design.

ANTI-SMUDGE FRAMES FOR TYPE E-1



DIFFUSER SIZE	L	O	A	H
10	20x20	12x12	11 3/4x11 3/4	5/8
12.5				
15				
17.5				
20	30x30	19x19	19x19	1
25				
30	38x38	24x24	24x24	1 1/4
37.5	45x45	31x31	31x31	1 1/4
45				

Typical Specifications

SPECIFICATIONS AND PLANS

Clear and concise specifications are of real assistance to a contractor, and enable him to make a correct take-off, and include in his bid all those components which are necessary for a good installation and the all-important "balancing of the system".

Plan details which are important in estimating and balancing describe the type of the unit, i.e. AR-3, CM-1, etc., and give the capacity at each outlet, and the size of the take-off. If the take-off duct, which has the same diameter as the neck of the unit, is sized according to the conservative values established in the tables of this Manual, the minimum size duct will be used, thereby providing an economical distribution system.

Typical basic specifications are written as follows:

ASPIRATING AIR DIFFUSERS—Contractor shall furnish and install Anemostat Air Diffusers as manufactured by Anemostat Corporation of America. Diffusers shall be of the aspirating type and sized as shown on the plans. Provide on each circular or square diffuser a Combo 1 (combination equalizing deflector and volume control) or Combo 2 (combination equalizing deflector, volume control and angle ring).

For Type AC Units furnish and install the Type ACED for equalization and volume control of the supply air and the ACXD for control of the extract air.

NOTES RE VOLUME CONTROL—The last two sentences of the above specification can be changed to suit the designer's requirements.

The foregoing specifications are based on the use of standard type units with standard finishes. Any other ideas of the designer, such as special finishes, automatic adjustments, etc., should be added to the basic specifications.

ALTERNATES—The "or equal" or "equal as approved" clauses in specifications describing air diffusers create more problems for engineers and contractors, as there is a wide difference in the performance of expanding cone or vane diffusers and square or circular ceiling louvers or plaques. The problem is further complicated by the fact that in many cases the size of the take-off suitable for Anemostat Air Diffusers is too small for some other types of ceiling outlets.

This problem has been solved by many specification writers by substituting for the "or equal" clause "priced alternates". This technique establishes the main bid on the outlets upon which the design has been based. Alternates are established on the basis of addition or deduction of money to the main bid for the substitution of alternate outlets. This gives the engineer a fair chance to evaluate the "money value" of the difference in performance, appearance and workmanship of the products of two or more manufacturers. The terminology of such an alternate is as follows:

> "Contractors should state the increase or decrease in cost if outlets other than Anemostat Air Diffusers as required by the base bid are approved. Alternate bids should include all accessories as described and any changes in ductwork necessary to assure that the outlets are installed in accordance with the manufacturer's recommendations for the specified occupancy. The contractor should state the types of outlets on which the alternate bid is based."

Manufacturer	Add	Deduct	Type of Outlets
....	.....	....	....
....	.....	....	....

HINTS ON STARTING AN AIR CONDITIONING SYSTEM

1. Do not start the air conditioning system without filters properly installed.

2. The system should be operated for about 24 hours, depending on condition of ducts, without the air outlets in position. If the air outlets are part of the ceiling, such as plaster frames, etc., the inner assemblies should be removed.

3. Upon completion of Point 2 it is advisable to insert in back of each air outlet a layer of cheesecloth to act as a filter and retain whatever dust, etc., that may still remain in the system.

4. Remove cheesecloth or similar material from air outlets when all construction has been completed and the system is ready for balancing and normal operation.

Note: Before turning on system be sure all dampers are open.

ANEMOSTAT UNITS

for

high velocity

air conditioning systems

THE ANEMOSTAT HIGH VELOCITY "ALL-AIR" DISTRIBUTION SYSTEM

The acceptance by engineers of the principles of high velocity and high velocity-high temperature differential air distribution, a field in which Anemostat is a pioneer, justified the extensive research program in our laboratories and the substantial tool investment in our factory. A standard line of attenuator-diffuser units are available which can be used to solve practically any high velocity air distribution problem. Each unit is carefully tested and calibrated with proper regard for all the variables which affect the performance and all data are presented here in practical and "easy to use" tables.

Excellent air distribution and diffusion and temperature control can be obtained with the Anemostat "All-Air" System, which has the following advantages over conventional and mixed cycle (air and water) systems:

1. No Coils—No Clogging—No Odor

There are no coils in the all-air high velocity units. Damp coils collect lint and emit dank odors and the coils must be cleaned periodically.

2. No Fans—No Filters—No Electric Motors

The all-air units operate entirely on the air which is processed in the main equipment rooms. The 100% induction units utilize the kinetic energy in the high velocity air to mix primary air with the room air.

3. No Conflict of Trades

The all-air units are installed by the sheet metal trades. The electrician, plumber and steam-fitter do not get involved in this work.

Anemostat High Velocity Units

4. More Effective Use of Outside Air in the Spring and Fall

The all-air units are supplied with more primary air than induction coil units. This allows the engineers to operate in the Spring and Fall on outside air to save refrigeration.

THE ANEMOSTAT ALL-AIR HIGH VELOCITY UNITS FEATURE THE FOLLOWING:

1. Scientific Air Diffusion

Anemostat is the leading manufacturer of air diffusers and conducts the most extensive research program. Each high velocity unit is provided with an aspirating or high induction type air diffuser which is scientifically designed to diffuse air without drafts.

2. Pressure Balancing

Each unit is provided with an "easy to operate" balancing device and a calibrated orifice. By using a simple pressure gage, a screwdriver and a calibration chart, Anemostat All-Air High Velocity Systems can be balanced more accurately than other systems and in less than half the time required to balance a low velocity system.

3. Minimum of Maintenance

Anemostat High Velocity Units require practically no maintenance after installation. The valve or valves are of the non-corrosive, die cast, "rocket-socket" type which is an Anemostat patented invention. This valve divides and diverts the air stream and reduces the static pressure with a minimum sound regeneration. This valve cannot clog. Because of their clogging characteristic no perforated plates or cylinders are used in Anemostat High Velocity Units. All moving parts are made of aluminum, bronze, brass or stainless steel.

4. Flexibility

All units can be adapted for the following variations:

1. Single duct for either zone, individual thermostatic, or manual remote control.
2. Dual duct for thermostatic control or any other type of pneumatic or manual control.
3. Single or dual duct units with the diffuser fastened to the unit, or remote from the attenuating unit.
4. Under-the-window, sidewall, or ceiling type installations.
5. Adaptable for complete range of application, i.e. industrial, stores, offices, churches, schools and hospitals.
6. Can be provided with standard aspirating diffusers or 100% induction type for all kinds of service.
7. Complete range of temperature differentials up to 33° below ambient for induction type units.

"HAND BOOK OF HIGH VELOCITY AIR DISTRIBUTION DESIGN"

The fundamentals of high velocity air distribution and diffusion is a subject which is beyond the scope of this manual. Your local Anemostat Sales Engineer has, for general distribution, a complete handbook on the subject which gives in detail an excellent system for sizing high velocity ducts, details of duct construction, proper design of plenums and fittings, dual duct systems, horsepower comparisons, and other important installation and application data. Please continue to consult the Anemostat magazine "Aspiration" which will continue to feature articles on high velocity systems and present new ideas and applications and design data.

HOW TO USE SELECTION TABLES

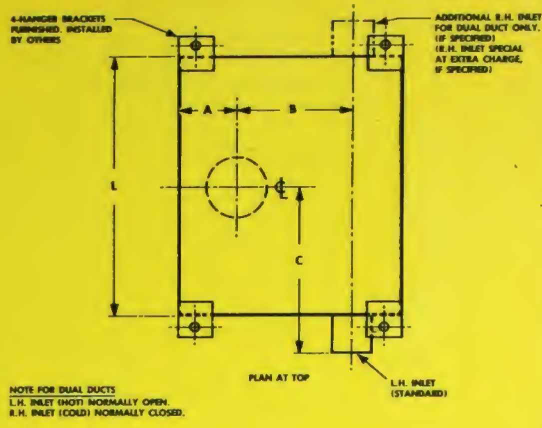
To properly select an attenuator diffuser combination the designer selects the sound level range according to the type of occupancy and the background sound level (See Page 7). It is important also to know the static pressure which will be imposed on the attenuator as this has a definite influence on its size and capacity.

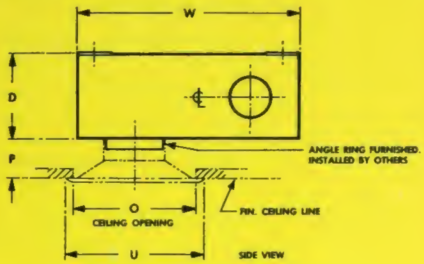
Having determined the capacity of the unit locate same on the table and scan horizontally to select the size unit which will produce the "designed for" sound level at the static pressure. The tables also show the size of diffuser which should be used with the unit. The type of diffuser can be any of the standard units shown in the first section of this manual.

NOTE: The minimum static pressure shown in the tables is the pressure which must be imposed on the unit when its valves are wide open to produce the air flow shown in the capacity column of the table. This pressure should always be added to the duct losses to assure that the last unit on the main duct will deliver the correct capacity.

Aspirating Units

TYPE HP





TYPE HP ASPIRATING UNITS

This series of high velocity units can be used with any of the Anemostat Standard Aspirating units for ceiling application. These units are used extensively for air conditioning interior and exterior zones using dual duct type or single duct type on zone control or single duct type with remote manually operated controls.

Where heating is required in exterior zones ceiling units should be supplemented by direct radiation, low returns or double glazing. The Under-the-Window Unit described on the following pages is the ideal heating-cooling unit and needs no supplementary help.

When selecting units the designer will assist the contractor and estimators by giving a complete designation and the unit capacity on the plans. This also enables the manufacturer to check his selection. For example, a unit for an office, when 300 cfm is required from a square diffuser, would be designated on the plans—HP-3—25 E—300 cfm. If a round adjustable unit was required the plan designation would be HP-3—25 C-2—300 cfm.

DIMENSION DATA

HP UNIT SIZE	L	W	INLET OD	A	B	C	D
HP-1	13½	22	3	5⅞	11½	10	8½
HP-2	25½	22	4	5⅞	11½	16⅝	8½
HP-3	30	30	5	8¼	16⅝	19½	8½
HP-4	42	30	6	8¼	16⅝	26⅛	8½
HP-5	42	42	8	10	25½	29½	10½

All dimensions in inches.

CEILING OPENING & OVERALL DIMENSIONS OF DIFFUSERS

DIFFUSER SIZE	TYPE AR-3			TYPE C-2			TYPE CM-1			TYPE E			TYPE E-1		
	O DIAM	U DIAM	P	O DIAM	U DIAM	P	O DIAM	U DIAM	P	O	U	P	O	U	P
10	—	—	—	—	—	—	11	13	3⅞	12x12	12x12	4¼	12x12	13¼x13¼	4
12.5	—	—	—	10¼	11¼	4⅝	11	13	3⅞	12x12	12x12	4¼	12x12	13¼x13¼	4
15	13	15	3⅛	12½	13½	4⅞	11	13	3⅞	12x12	12x12	4¼	12x12	13¼x13¼	4
20	18	20	3⅛	17	18	5½	16	18	4⅛	24x24	24x24	5⅛	19x19	21x21	4⅞
25	21	24	3⅛	21	22½	6⅛	21	24	4½	24x24	24x24	5⅛	19x19	21x21	4⅞
30	22	26	2½	25	27	7½	21	24	4⅜	24x24	24x24	5½	24x24	27x27	5⅜
37.5	22	30	2½	31	33¾	9⅜	31	34	5¾	—	—	—	31x31	34x34	5⅝

All dimensions in inches.

P dimensions shown are minimum and may be increased by ¼″ with adjusting screws in outer cone of diffusers (Sizes 10 through 30). Size 37.5 has no adjustment screws. Attach outer cone to angle ring with sheet metal screws.

TYPE HP Performance Data

CAPACITY CFM	RADII OF DIFFUSION MIN.-MAX. DIFFUSER TYPE AR-3	C-2	CM-1	E&E-1	HP-1 UNIT DIFFUSER SIZE	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	HP-2 UNIT DIFFUSER SIZE	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.
40-80	—	3-5	3-5	3-6	10	.15	33	40	41	43						
					12.5	.1	27	35	37	38						
100	—	3-5	3-5	3-6	10	.25	37	40	41	43						
					12.5	.15	30	36	39	40						
125	—	3-5	3-7	3-7	10	.4	44	45	45	46						
					12.5	.25	34	39	41	42						
150	3-5	3-6	3-7	4-8	10	.6	50	51	51	52	15	.18	33	34	38	39
					12.5	.4	40	43	44	45	20	.1	29	33	37	38
175	3-5	3-7	4-8	4-9	10	.8	55	55	55	56	15	.25	37	38	40	40
					12.5	.5	45	47	47	49	20	.15	30	33	38	38
200	3-6	4-8	5-9	5-10	10	1.0	59	59	59	60	15	.3	40	41	41	42
					12.5	.7	49	50	50	51	20	.2	31	35	39	40
225	3-6	4-9	5-10	5-11							15	.4	43	44	44	45
					12.5	.9	53	53	53	54	20	.25	32	36	40	41
250	3-6	5-10	6-11	6-12							15	.5	45	46	46	47
					12.5	1.0	56	56	56	57	20	.3	33	36	41	41
275	3-7	5-11	6-12	6-12							15	.6	47	48	48	49
					12.5	1.3	59	60	60	61	20	.4	35	38	41	42
300	3-7	5-11	6-12	6-13							15	.7	50	50	50	51
											20	.45	37	40	42	43
325	4-7	6-11	6-12	6-13							15	.8	52	52	52	53
											20	.55	39	41	43	44
350	4-8	6-12	7-12	6-13							15	.95	54	54	54	55
											20	.65	41	43	44	45
400	4-9	6-13	7-13	7-13							15	1.2	58	58	58	59
											20	.8	45	46	47	47
450	4-9	7-13	7-14	7-14												
											20	1.0	48	48	49	49
500	5-9	7-13	7-14	8-16												
550	5-10	7-14	7-15	9-18												
600	5-10	7-15	8-16	9-18												
650	5-11	8-16	8-17	9-19												
700	6-11	8-17	9-18	10-21												
750	6-11	8-17	9-18	11-21												
800	6-11	8-18	9-19	11-23												
850	6-12	9-18	9-19	12-24												
900	6-12	9-18	10-20	12-25												
950	6-13	9-19	10-21	13-26												
1000	7-14	10-20	11-22	14-26												
1050	7-14	10-20	11-22	14-26												
1100	7-14	10-20	11-22	14-27												
1150	7-15	10-21	11-23	14-27												
1200	7-15	11-21	12-24	14-28												
1250	7-16	11-22	12-24	14-28												
1300	7-16	11-23	12-25	14-28												
1350	8-16	12-24	12-25	14-28												

Refer to Page 7 for explanation of decibel ratings.

Performance Data

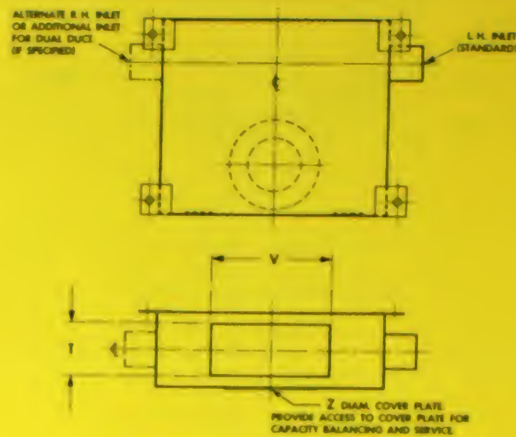
TYPE HP

HP-3 UNIT						HP-4 UNIT						HP-5 UNIT						
DIFFUSER SIZE	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	DIFFUSER SIZE	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	DIFFUSER SIZE	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	TYPICAL ROOM ABSORPTION SABINS
																		80
																		90
																		105
																		115
																		130
																		140
																		155
20	.1	31	35	36	37													165
20	.12	32	36	37	38													175
20	.15	34	38	39	40													190
25	.13	31	36	37	38													
20	.17	37	40	40	41													205
25	.15	32	37	38	39													
20	.2	40	43	43	44	25	.2	31	36	38	38							215
25	.18	34	39	40	41	30	.15	30	35	37	37							
20	.25	44	45	45	46	25	.25	33	37	38	38							240
25	.23	37	41	42	43	30	.2	31	37	38	38							
20	.35	48	49	49	50	25	.3	36	39	40	41							265
25	.3	41	43	44	45	30	.25	33	39	40	41							
20	.4	50	51	51	52	25	.4	38	41	42	42	37.5	.25	29	39	41	42	290
25	.37	43	45	46	47	30	.3	36	40	41	42							
20	.5	53	53	53	54	25	.5	41	42	43	43	37.5	.3	30	40	42	43	320
25	.45	46	47	47	48	30	.4	39	41	42	42							
20	.6	55	56	56	56	25	.6	43	44	45	45	37.5	.35	32	41	43	44	340
25	.55	49	50	50	51	30	.45	41	42	44	44							
20	.7	57	57	57	58	25	.7	45	46	46	47	37.5	.4	35	42	44	45	365
25	.6	51	51	51	52	30	.55	43	44	45	46							
20	.8	60	61	61	62	25	.8	48	48	48	49	37.5	.5	37	42	44	45	390
25	.75	53	54	54	55	30	.6	45	46	47	47							
						25	.9	50	51	51	51	37.5	.55	39	43	45	46	415
25	.85	54	55	55	56	30	.7	47	48	48	49							
						25	1.0	52	52	52	52	37.5	.65	40	44	45	46	440
						30	.8	49	50	50	50							
						25	1.2	53	53	53	54	37.5	.7	42	45	46	47	465
						30	.9	51	51	51	52							
						25	1.3	54	54	54	55	37.5	.8	44	46	47	48	490
						30	1.0	52	52	53	53							
						25	1.5	56	56	56	57	37.5	.9	46	47	48	49	520
						30	1.2	53	53	54	54							
						25	1.6	58	58	58	58	37.5	1.0	47	48	49	50	540
						30	1.3	55	56	56	56							
						25	1.8	60	60	61	61	37.5	1.1	49	50	51	51	565
						30	1.4	56	57	57	57							
												37.5	1.2	50	50	51	52	590
						30	1.6	58	58	59	59							
												37.5	1.3	51	51	52	53	620
												37.5	1.4	53	53	54	54	640
												37.5	1.5	54	54	55	55	690
												37.5	1.6	55	55	56	56	720
												37.5	1.8	56		57	57	740

TYPE HP End Discharge and Octopus

DUAL INLET UNIT

DUAL INLET UNIT



END DISCHARGE				
HP UNIT SIZE	INLET OD	T	V	Z
HP-3	5	6	13½	15½
HP-4	6	6	22	15½
HP-5	8	8	22	18

All dimensions in inches.

END DISCHARGE AND OCTOPUS

This series of high velocity units are generally the same as the standard series except the ends are opened so low velocity ducts can be fastened to the units to carry air to diffusers, which are not directly connected to the attenuator units. Sizes HP-3, HP-4 and HP-5 boxes can also be provided with angle rings to which round flexible or non-flexible ducts can be fastened and extended to diffusers to produce the popular "octopus" design.

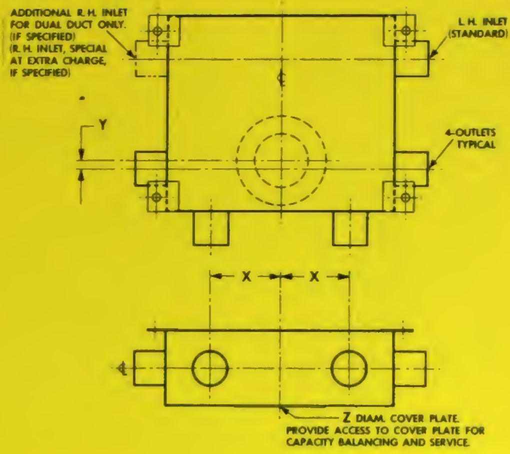
These units can be of the standard type for zone control or they can be adapted for dual duct systems, single duct with automatic control over-riding zone control or with manual remote control over-riding the zone control. A popular and economical design is to provide one attenuator unit in each interior bay and run low velocity ducts to four diffusers in the bay. The type of control can be selected to suit the type of occupancy and the tenant's requirements.

HP UNITS

CAPACITY CFM	HP-3 UNIT									
	OCTOPUS					DUCT END				
		DECIBEL RANGE					DECIBEL RANGE			
	MIN. S.P.	AT MIN. S.P.	AT 1¼" S.P.	AT 2¼" S.P.	AT 3" S.P.	MIN. S.P.	AT MIN. S.P.	AT 1¼" S.P.	AT 2¼" S.P.	AT 3" S.P.
200										
250	.1	29	36	39	40	.1	30	37	40	41
300	.1	31	37	40	41	.15	32	38	41	42
350	.2	32	39	41	42	.25	33	40	42	43
400	.25	35	40	42	43	.3	36	41	43	44
450	.3	37	41	43	44	.35	38	42	44	45
500	.35	40	43	44	45	.45	41	44	45	46
550	.45	42	44	46	46	.5	43	45	47	47
600	.5	44	46	47	48	.6	45	47	48	49
650	.6	46	47	48	49	.7	47	48	49	50
700	.7	48	49	50	50	.8	49	50	51	51
750	.8	49	50	51	51	9	50	51	52	52
800	.9	51	52	53	53	1.1	52	53	54	54
850	1.1	53	53	54	54	1.2	54	54	55	55
900	1.2	54	55	56	56	1.4	55	56	57	58
950										
1000										
1050										
1100										
1150										
1200										
1250										
1300										
1350										
1400										
1450										
1500										
1550										

Refer to Page 7 for explanation of decibel ratings.

End Discharge and Octopus



OCTOPUS					
HP UNIT SIZE	INLET OD	OUTLET OD TYP.	X	Y	Z
HP-3	5	5	9⅜	3⅛	15½
HP-4	6	6	15⅜	3⅛	15½
HP-5	8	8	14½	3½	18

All dimensions in inches.

OCTOPUS & DUCT END

HP-4 UNIT										HP-5 UNIT									
OCTOPUS					DUCT END					OCTOPUS					DUCT END				
	DECIBEL RANGE					DECIBEL RANGE					DECIBEL RANGE					DECIBEL RANGE			
MIN. S.P.	AT MIN. S.P.	AT 1¼" S.P.	AT 2½" S.P.	AT 3" S.P.	MIN. S.P.	AT MIN. S.P.	AT 1¼" S.P.	AT 2½" S.P.	AT 3" S.P.	MIN. S.P.	AT MIN. S.P.	AT 1¼" S.P.	AT 2½" S.P.	AT 3" S.P.	MIN. S.P.	AT MIN. S.P.	AT 1¼" S.P.	AT 2½" S.P.	AT 3" S.P.
.2	28	35	37	38	.12	29	37	39	40										
.3	31	36	38	39	.15	32	38	40	41										
.35	33	37	39	40	.2	35	39	41	42										
.4	35	39	40	41	.25	37	41	42	43	.2	29	38	41	42	.2	29	38	41	42
.5	37	40	41	42	.3	39	42	43	44	.25	30	39	41	42	.25	30	39	41	42
.6	39	41	43	43	.35	41	43	44	45	.3	31	40	41	43	.3	31	40	41	43
.7	41	43	44	45	.4	43	44	45	46	.35	33	40	42	43	.35	33	40	42	43
.8	43	44	46	46	.45	45	46	47	48	.45	34	41	43	44	.45	34	41	43	44
.95	45	46	47	47	.55	47	48	49	49	.5	36	42	43	44	.5	36	42	43	44
1.1	47	47	48	48	.6	48	49	50	50	.55	37	43	44	45	.55	37	43	44	45
1.2	48	49	50	50	.65	49	50	51	51	.65	39	44	45	46	.65	39	44	45	46
1.4	49	50	51	51	.75	51	51	52	52	.7	40	44	45	46	.7	40	44	45	46
1.5	51	51	52	52	.85	52	52	53	53	.8	41	45	46	47	.8	41	45	46	47
1.6	52	52	53	53	.9	53	53	54	54	.9	42	46	47	48	.9	42	46	47	48
										.95	43	47	48	49	.95	43	47	48	49
										1.0	44	47	48	49	1.0	44	47	48	49
										1.1	45	48	49	50	1.1	45	48	49	50
										1.2	46	49	50	51	1.2	46	49	50	51
										1.4	47	49	50	51	1.4	47	49	50	51
										1.5	48	50	51	52	1.5	48	50	51	52
										1.6	49	50	51	52	1.6	49	50	51	52
										1.7	50	51	52	53	1.7	50	51	52	53
										1.8	50		52	53	1.8	50		52	53
										2.0	51		53	53	2.0	51		53	53
										2.1	52		53	54	2.1	52		53	54

TYPE HPSL Aspirating SL Unit

DUAL INLET UNIT

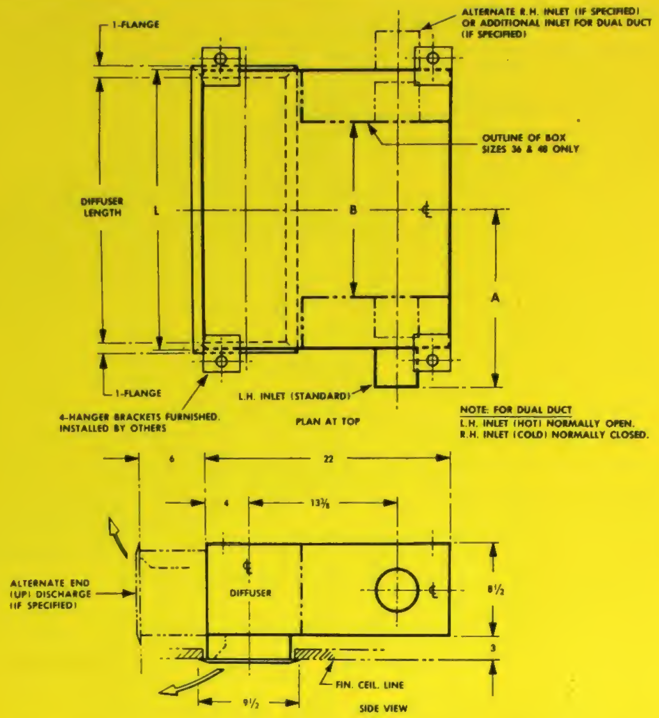
HPSL — ASPIRATING UNITS

This type of unit can be used for either ceiling or wall type installations. For ceiling and wall applications this unit should not be used when the temperature differential is over 20F. For higher temperature differentials use the HPSL-100 induction type units.

These units also can be adapted to all the various types of controls including single and dual duct automatic, remote manually operated, and standard zone control.

CAPACITY CFM	12″ HPSL - ASPIRATING DIFF. MIN.–MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¼″ S.P.	AT 2½″ S.P.	AT 3″ S.P.
40	5-11	.1	28	33	35	36
50	6-11	.1	30	35	36	37
60	7-13	.15	31	36	37	38
70	8-15	.2	32	36	37	38
80	9-17	.25	33	37	38	39
90	10-18	.35	35	38	39	40
100	11-19	.4	38	40	41	42
120	12-20	.6	43	44	45	45
140	13-21	.8	47	48	48	49
160	14-22	1.1	51	51	52	52
180	15-23	1.3	55	55	56	56
200						
220						
240						
260						
280						
300						
320						
340						
360						
380						
400						
440						
480						
520						
560						

Refer to Page 7 for explanation of decibel ratings.



DIMENSION DATA					
HP UNIT SIZE	DIFFUSER LENGTH	L	INLET OD	A	B
12	12	13½	3	10	—
24	24	25½	4	16⅝	—
36	36	37½	4	16⅝	25½
48	48	49½	5	23¼	37½

All dimensions in inches.

These dimensions are approximate. Installation drawings will be furnished upon request.

24″ HPSL - ASPIRATING						36″ HPSL - ASPIRATING						48″ HPSL - ASPIRATING						TYPICAL ROOM ABSORPTION
DIFF. MIN.–MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	DIFF. MIN.–MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	DIFF. MIN.–MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	SABINES
																		60
																		65
																		70
																		75
																		80
																		85
8-13	.1	30	36	38	39													90
9-14	.15	32	37	39	41	7-12	.1	30	36	38	39							100
10-16	.2	35	39	41	43	8-14	.15	31	37	39	40							110
11-18	.25	38	41	43	45	9-16	.15	32	38	40	41							120
12-19	.3	40	43	45	47	10-17	.2	33	39	41	42							135
13-20	.35	43	45	46	48	11-18	.25	35	40	42	43	10-16	.15	30	34	36	37	140
14-21	.45	46	48	49	50	12-19	.3	36	41	42	44	11-17	.15	31	35	37	38	150
15-22	.55	48	49	50	51	13-20	.35	38	42	43	45	12-18	.2	32	36	38	39	160
16-23	.6	51	52	52	53	14-21	.45	39	43	44	45	13-19	.2	33	37	38	39	170
17-24	.7	53	54	54	55	15-22	.5	41	44	45	46	14-20	.25	35	37	39	40	180
18-24	.8	55	56	57	58	16-23	.55	43	45	46	47	15-21	.3	36	38	39	40	190
						17-23	.65	45	46	47	48	16-21	.35	37	39	40	41	200
						18-24	.7	46	47	48	49	17-22	.4	38	40	41	42	210
						19-24	.8	48	48	49	50	18-23	.45	39	41	42	43	220
						20-25	.9	50	51	51	52	19-24	.5	40	42	43	44	230
						21-26	1.0	52	53	53	54	20-25	.55	42	43	44	46	240
												21-25	.65	45	46	47	48	260
												22-26	.75	48	49	50	50	280
												23-27	.9	51	52	52	53	300
												24-28	1.0	53	54	54	55	320

TYPE HPSL 100 Induction SL Unit

DUAL INLET UNIT

HPSL-100 CEILING AND WALL MOUNTED UNITS

The HPSL-100 series is an extremely important development and can be used to solve many problems. These units are of the 100% induction type. For each 100 cubic feet of primary air brought to the unit, up to 100 cubic feet of room air is drawn into the unit and the mixture discharged in multiple layers of air, which travel parallel to the surface in which the diffuser is located.

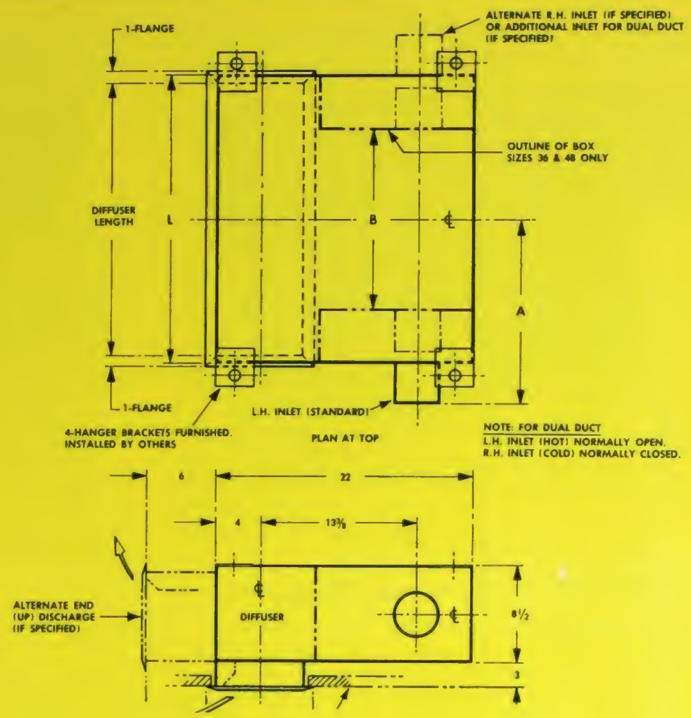
When high temperature differentials are used the induction feature of this unit reduces the effect of the temperature differential, decreases the air density and doubles the air mass placed in circulation to compensate for the low quantity of primary air usually associated with high temperature differential distribution systems. This assures adequate, comfortable circulation even though the primary air is quantitatively low.

These units can be used for ceiling or wall mounting on either single or dual duct systems and for thermostatic, zone or remote manual control. Thermostats can be placed in the room or actually in the unit where it can be influenced by the induced air stream.

Another important application for this type of unit is to place the attenuator boxes in a corridor and the diffuser in the side wall of a room. This method has been used successfully in hospitals and hotels and this general type of layout should also be considered when systems are being designed for existing building. Several hospitals, in which this system was used with remote manual controls over-riding a zone control, report a low cost initial installation and good operating characteristics.

CAPACITY CFM	12" HPSL — 100					
	DIFF. MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE			
			AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.
40	6-11	.1	30	32	32	33
50	7-13	.15	31	32	33	34
60	8-15	.2	32	34	35	36
70	9-17	.25	36	37	38	39
80	10-18	.3	40	40	41	42
90	11-19	.4	43	43	44	44
100	12-20	.5	46	46	47	47
120	13-22	.7	50	50	51	51
140	14-23	1.0	54	54	55	55
160						
180						
200						
220						
240						
260						
280						
300						
320						
340						
360						
380						
400						
420						

Refer to Page 7 for explanation of decibel ratings.



DIMENSION DATA					
HP UNIT SIZE	DIFFUSER LENGTH	L	INLET OD	A	B
12	12	13½	3	10	—
24	24	25½	4	16⅝	—
36	36	37½	4	16⅝	25½
48	48	49½	5	23¼	37½

All dimensions in inches.

These dimensions are approximate. Installation drawings will be furnished upon request.

24″ HPSL — 100						36″ HPSL — 100						48″ HPSL — 100						TYPICAL ROOM ABSORPTION SABINES
DIFF. MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	DIFF. MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	DIFF. MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	
																		60
																		65
																		70
6-11	.1	30	33	34	35													75
7-12	.1	31	33	35	36													80
8-13	.1	32	34	35	36													85
9-14	.15	35	37	38	39													90
10-16	.2	38	39	39	40	7-12	.15	32	34	35	36							100
11-18	.25	39	40	41	42	8-14	.2	34	36	37	38							110
12-19	.35	42	43	44	45	9-16	.3	37	39	40	40							120
13-20	.45	45	46	47	48	10-17	.35	39	41	42	42	9-16	.15	32	34	35	36	135
14-21	.55	48	48	49	50	11-18	.45	40	42	43	44	10-17	.2	34	35	36	37	140
15-22	.7	51	51	52	53	12-19	.55	43	44	45	46	11-18	.25	36	37	38	39	150
16-23	.8	54	54	55	55	13-20	.6	46	47	48	49	12-19	.3	37	38	39	40	160
17-24	.9	56	56	57	57	14-21	.75	49	49	50	51	13-20	.35	39	40	41	42	170
18-24	1.1	59	59	60	60	15-22	.9	51	51	52	53	14-21	.4	40	41	42	43	180
						16-23	1.0	53	53	54	54	15-21	.45	41	42	43	44	190
						17-23	1.1	54	54	55	56	16-22	.55	43	44	45	46	200
						18-24	1.3	56	56	57	57	17-23	.6	46	47	48	49	210
						18-24	1.4	58	58	59	59	18-24	.7	49	49	50	50	220
												19-24	.75	51	51	52	52	230
												20-25	.8	52	52	53	54	240
												20-25	.9	53	54	55	55	250

TYPE UTW (Under the Window) Induction Unit

DUAL INLET-FRONT DISCHARGE

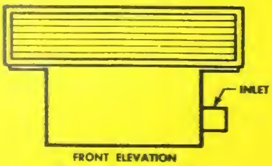
DUAL INLET-SILL DISCHARGE

UTW (100% INDUCTION)—Under-the-Window Unit

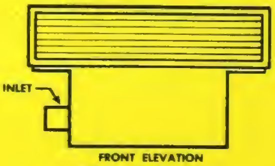
The Under-the-Window Unit is the ideal unit to use in the exterior zone especially where both heating and cooling must be accomplished. The units can be single or dual duct, thermostatic (internal or wall mounted), or manual control. These units have been used with good results on single duct zone controlled systems.

The induction feature assures that up to 100 cfm of room air is drawn into the diffuser section of the unit for each 100 cfm of primary air and the mixture of primary and room air is scientifically discharged to the ceiling, entraining the hot or cold air from the windows, and the air is rolled across the ceiling to effectively cover the area and assure perfect draftless diffusion. These units will operate successfully with high temperature differentials 30°F or more below the ambient. The induction feature causes the density of the air to be reduced and doubles the air mass.

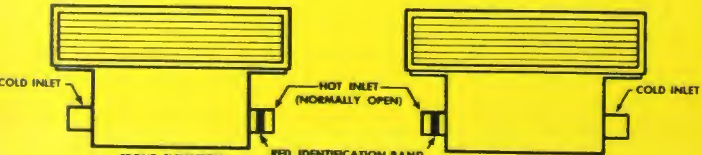
The units can be either sill or front discharge to suit the architects' requirements.



FRONT ELEVATION
TYPE 1 (Single Inlet)



FRONT ELEVATION
TYPE 2 (Single Inlet)



FRONT ELEVATION
TYPE 1 (Dual Inlet)

FRONT ELEVATION
TYPE 2 (Dual Inlet)

CAPACITY CFM	12" HPSL - 100 UTW					
	DIFF.* MIN.–MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.
40	2-11	.1	30	32	32	33
50	4-13	.15	31	32	33	34
60	6-15	.2	32	34	35	36
70	8-17	.25	36	37	38	39
80	9-18	.3	40	40	41	42
90	10-19	.4	43	43	44	44
100	11-20	.5	46	46	47	47
120	13-22	.7	50	50	51	51
140	14-23	1.0	54	54	55	55
160						
180						
200						
220						
240						
260						
280						
300						
320						
340						
360						
380						
400						
420						

Refer to Page 7 for explanation of decibel ratings.

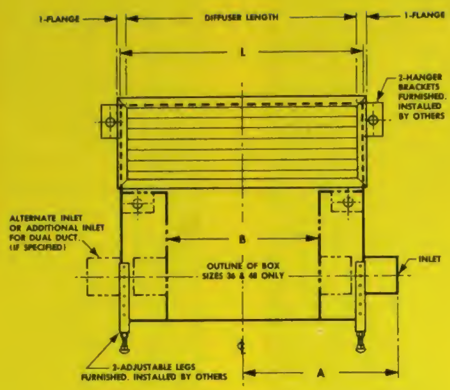
(Under the Window) Induction Unit

TYPE UTW

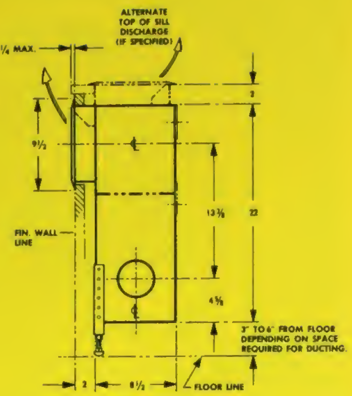
DIMENSION DATA					
HP UNIT SIZE	DIFFUSER LENGTH	L	INLET OD	A	B
12	12	13½	3	10	—
24	24	25½	4	16⅝	—
36	36	37½	4	16⅝	25½
48	48	49½	5	23¼	37½

All dimensions in inches.

These dimensions are approximate. Installation drawings will be furnished upon request.



FRONT VIEW



SIDE VIEW

NOTE FOR DUAL DUCTS
L.H. INLET (HOT) NORMALLY OPEN.
R.H. INLET (COLD) NORMALLY CLOSED.

24″ HPSL-100 UTW						36″ HPSL-100 UTW						48″ HPSL-100 UTW						TYPICAL ROOM ABSORPTION
DIFF.* MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	DIFF.* MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	DIFF.* MIN.-MAX. FORWARD	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾″ S.P.	AT 2½″ S.P.	AT 3″ S.P.	SABINES
																		60
																		65
																		70
2-11	.1	30	33	34	35													75
3-12	.1	31	33	35	36													80
4-13	.1	32	34	35	36													85
5-14	.15	35	37	38	39													90
7-16	.2	38	39	39	40	3-12	.15	32	34	35	36							100
8-17	.25	39	40	41	42	5-14	.2	34	36	37	38							110
10-19	.35	42	43	44	45	7-16	.3	37	39	40	40							120
11-20	.45	45	46	47	48	8-17	.35	39	41	42	42	5-14	.15	32	34	35	36	135
12-21	.55	48	48	49	50	9-18	.45	40	42	43	44	7-16	.2	34	35	36	37	140
13-22	.7	51	51	52	53	10-19	.55	43	44	45	46	8-17	.25	36	37	38	39	150
14-23	.8	54	54	55	55	11-20	.6	46	47	48	49	9-18	.3	37	38	39	40	160
15-24	.9	56	56	57	57	12-21	.75	49	49	50	51	10-19	.35	39	40	41	42	170
15-24	1.1	59	59	60	60	13-22	.9	51	51	52	53	11-20	.4	40	41	42	43	180
						14-23	1.0	53	53	54	54	12-21	.45	41	42	43	44	190
						14-23	1.1	54	54	55	56	13-22	.55	43	44	45	46	200
						15-24	1.3	56	56	57	57	13-22	.6	46	47	48	49	210
						15-24	1.4	58	58	59	59	14-23	.7	49	49	50	50	220
												14-23	.75	51	51	52	52	230
												15-24	.8	52	52	53	54	240
												15-24	.9	53	54	55	55	250

* 1—Diffusion forward is from wall out, based on a 9′-0″ ceiling height. for each additional foot of ceiling height decrease by a like amount.
2—Spread (window coverage) equals length of unit plus 4′ (2′ each side).
3—Same diffusion for both sill or front discharge.

TYPE HP 100 Induction Units

CM-1-100

E-1-100

HP E-100, E-1-100, CM-1-100

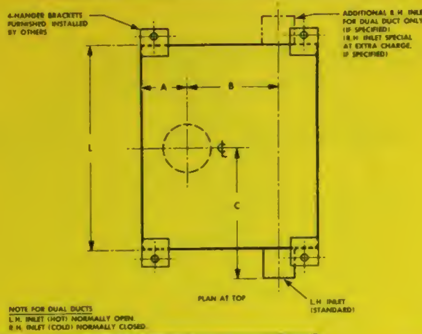
The HP E-100, E-1-100 and CM-1-100 units satisfy a demand for ceiling mounted units with a center induction feature and radial distribution. These units induce through the center approximately 100 cubic feet of room air for every 100 cubic feet of primary air which is brought to the unit. Like the HPSL-100 series these units can handle temperature differentials which are only limited by the characteristics of a practical refrigeration cycle.

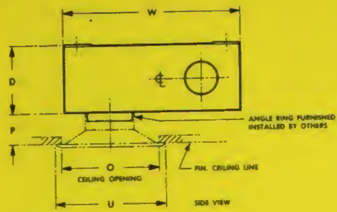
The units can be adapted for single or dual duct automatic control, single duct remote manual control, or standard zone control.

CAPACITY CFM Primary Air	HP-1 UNIT "100" SIZE # 12.5 DIFFUSER						HP-2 UNIT "100" SIZE # 20 DIFFUSER					
	RAD. OF DIFF. MIN.-MAX.	MIN. S.P.	DECIBEL RANGE				RAD. OF DIFF. MIN.-MAX.	MIN. S.P.	DECIBEL RANGE			
			AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.			AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.
50	2-4	.1	27	34	34	36						
60	2-5	.15	28	35	36	37						
80	2-6	.2	29	36	37	38						
100	3-6	.3	32	37	38	40						
125	3-7	.5	39	41	42	43	2-6	.15	31	35	39	40
150	4-8	.75	44	46	47	48	3-7	.2	32	36	40	41
175	4-9	1.0	48	50	51	52	3-8	.25	33	37	41	42
200	5-10	1.3	52	52	53	54	4-9	.35	34	38	42	43
225	6-12	1.7	56	56	57	57	4-10	.4	35	38	43	43
250	6-12	2.0	59	59	60	60	4-10	.45	37	40	43	44
275							5-11	.55	39	42	44	45
300							5-12	.65	41	43	45	46
325							6-13	.75	43	45	46	47
350							6-14	1.0	47	48	49	49
400							7-15	1.3	50	50	51	51
450												
500												
550												
600												
650												
700												
750												
800												
850												
900												
950												
1000												
1050												
1100												
1150												
1200												

Refer to Page 7 for explanation of decibel ratings.

Induction Units





DIMENSION DATA							
HP UNIT SIZE	L	W	INLET OD	A	B	C	D
HP-1	13½	22	3	5⅞	11½	10	8½
HP-2	25½	22	4	5⅞	11½	16⅝	8½
HP-3	30	30	5	8¼	16⅝	19½	8½
HP-4	42	30	6	8¼	16⅝	26⅛	8½
HP-5	42	42	8	10	25½	29½	10½

All dimensions in inches.
These dimensions are approximate.
Installation drawings will be furnished upon request.

CEILING OPENING & OVERALL DIMENSIONS OF DIFFUSERS									
DIFFUSER SIZE	TYPE CM-1-100			TYPE E-1-100			TYPE E-100		
	O-DIAM	U-DIAM	P	O	U	P	O	U	P
12.5	11	13	4	12 x 12	13¼ x 13¼	4 3/16	12 x 12	12 x 12	4⅜
20	16	18	4½	19 x 19	21 x 21	5 7/16	24 x 24	24 x 24	5⅝
30	21	24	5	24 x 24	27 x 27	5 15/16	24 x 24	24 x 24	6
37.5	31	34	7¼	31 x 31	34 x 34	8 1/16	—	—	—

P dimensions shown are minimum and may be increased by ¼" with adjusting screws in outer cone of diffusers.
Sizes 37.5 have no adjusting screws, attach outer cone to angle ring with sheet metal screws.

HP-3 UNIT "100" SIZE # 30 DIFFUSER						HP-4 UNIT "100" SIZE # 30 DIFFUSER						HP-5 UNIT "100" SIZE # 37.5 DIFFUSER						TYPICAL ROOM ABSORP-TION SABINES
RAD. OF DIFF. MIN.-MAX.	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	RAD. OF DIFF. MIN.-MAX.	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	RAD. OF DIFF. MIN.-MAX.	MIN. S.P.	DECIBEL RANGE AT MIN. S.P.	AT 1¾" S.P.	AT 2½" S.P.	AT 3" S.P.	
																		65
																		70
																		80
																		90
																		105
																		115
																		130
																		140
																		155
3-8	.15	29	38	40	41													165
4-9	.15	29	39	41	42													175
4-9	.2	30	39	42	43													190
4-10	.25	32	40	42	43													205
5-11	.3	34	41	43	44	5-11	.2	30	34	37	39							215
5-12	.4	38	42	44	45	5-12	.25	34	37	39	41							240
5-12	.5	41	43	45	46	5-12	.3	37	39	41	42							265
6-13	.6	44	45	46	47	6-13	.4	41	42	43	44	5-11	.3	32	40	42	43	290
6-14	.7	46	47	47	48	6-14	.45	43	44	45	46	6-12	.35	35	41	43	44	320
7-15	.85	48	49	49	50	7-15	.55	46	46	47	48	6-13	.45	38	42	43	44	340
7-15	1.0	51	51	52	52	7-15	.65	48	48	49	50	7-14	.5	40	43	44	45	365
8-16	1.2	53	53	54	54	8-16	.75	50	51	51	52	7-15	.6	42	44	45	46	390
9-18	1.3	55	55	56	56	9-18	.85	52	52	53	53	8-16	.7	44	45	46	47	415
						9-19	1.0	54	54	55	55	8-17	.8	45	46	47	48	440
						10-20	1.1	56	56	57	57	9-18	.9	47	47	48	49	465
						10-21	1.2	58	59	59	60	9-19	1.0	49	49	50	50	490
												10-20	1.1	51	51	52	52	520
												10-21	1.2	52	52	53	53	540
												11-22	1.3	53	53	54	54	565
												11-23	1.5	55	55	56	56	590
												12-24	1.6	56	56	57	57	620
												12-25	1.7	57	57	58	58	640

Pneumatic Operators

PNEUMATIC OPERATORS FOR ANEMOSTAT HIGH VELOCITY UNITS

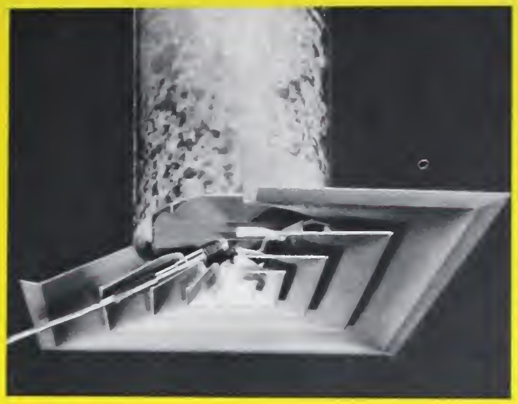
ANEMOSTAT HIGH VELOCITY UNIT		JOHNSON SERVICE	MINNEAPOLIS-HONEYWELL *	POWERS REGULATOR *
TYPE & SIZE	TYPE DISCHARGE			
HP-1	BOTTOM	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HP-2	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HP-3	"	TA9006-LK29-10¼R	MO-900B #13239*	J-246-21*
HP-4	"	TA9006-LK29-10¼R	MO-900B #13239*	J-246-21*
HP-5	"	TA7620-LK33-18¼R	MO-900C & LINKAGE	J-246-22
HPE-3	END	TA11445-4¾R	MO-900B #13257*	J-246-28*
HPE-4	"	TA11445-4¾R	MO-900B #13257*	J-246-28*
HPE-5	"	TA7620-LK33-18¼R	MO-900C & LINKAGE	J-246-22
HPO-3	OCTOPUS	TA11445-4¾R	MO-900B #13257*	J-246-28*
HPO-4	"	TA9006-LK29-10¼R	MO-900B #13239*	J-246-21*
HPO-5	"	TA7620-LK33-18¼R	MO-900C & LINKAGE	J-246-22
HPSL-12B	BOTTOM	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HPSL-24B	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HPSL-36B	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HPSL-48B	"	TA9006-LK34-5¼R	MO-900B #13257*	J-246-33*
HPSL-12E	END	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HPSL-24E	"	TA11445-3¼R	MO-900B #13257*	J-246-10*
HPSL-36E	"	TA11445-3¼R	MO-900B #13257*	J-246-10*
HPSL-48E	"	TA11445-5¼R	MO-900B #13257*	J-246-33*
HPSL-100-12B	BOTTOM	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HPSL-100-24B	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HPSL-100-36B	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HPSL-100-48B	"	TA9006-LK34-5¼R	MO-900B #13257*	J-246-33*
HPSL-100-12E	END	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HPSL-100-24E	"	TA11445-3¼R	MO-900B #13238*	J-246-10*
HPSL-100-36E	"	TA11445-3¼R	MO-900B #13238*	J-246-10*
HPSL-100-48E	"	TA11445-5¼R	MO-900B #13257*	J-246-33*
HP-UTW-12F	FRONT	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HP-UTW-24F	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HP-UTW-36F	"	TA9006-LK34-3¼R	MO-900B #13257*	J-246-10*
HP-UTW-48F	"	TA9006-LK34-5¼R	MO-900B #13257*	J-246-33*
HP-UTW-12S	SILL	TA7617-LMP-LK21-3¾R	MO-900A #13238	J-246-20*
HP-UTW-24S	"	TA11445-3¼R	MO-900B #13257*	J-246-32*
HP-UTW-36S	"	TA11445-3¼R	MO-900B #13257*	J-246-32*
HP-UTW-48S	"	TA11445-5¼R	MO-900B #13257*	J-246-33*

INTEGRAL THERMOSTATS FOR UNDER THE WINDOW UNITS (UTW)**

SINGLE INLETS				
SL-100-T SIZES 12"-24" 36"-48" UTW	FRONT SILL	T432	TO902	1181-B
DUAL INLETS				
SL-100-T SIZES 12"-24" 36"-48" UTW	FRONT SILL	T403	TO902	124-A

*Note: Pneumatic operators must be specified L.H. or R.H. on the control order to Minneapolis-Honeywell or Powers. The pneumatic operators must be ordered by the control representative for shipment to the Anemostat factory.
**Diffusers for integral thermostats have provision for mounting but the thermostats are supplied and installed in the field by the control manufacturer. Specify on order for use with integral thermostat.

Anemotherm Air Meter



The Anemotherm Air Meter is an instrument designed specifically to help the contractor and the engineer to balance air distribution systems. It is an instrument of the heated resistance thermometer type designed for low velocity readings from 10 fpm to 300 fpm, (draft detection), high velocity readings from 300 to 6000 fpm such as in the neck of an outlet or in a duct, air temperatures from 30F to 155F, and static pressures in ducts or plenums both positive and negative (0-4" H_2O).

The Anemotherm Air Meter is a rapid, yet dampened needle instrument which is relatively non-directional in character. Air flow may strike the electric probe at 45° from the normal, and on any side, and yet the true resultant velocity will be read. The scale is so designed and calibrated that it is direct reading, and no correction factors, charts, or calculations are required. The battery operated Anemotherm Air Meter is small, light (less than eleven pounds), compact and easy to use.

Engineers and contractors throughout the country who have used the Anemotherm Air Meter have found a saving of at least 40% in the time required for balancing air distribution systems. With the high cost of labor, the savings in the cost of balancing from one or two medium-sized jobs will pay for the instrument itself. As the Anemotherm Air Meter is designed to give many years of service to its owner, the cost can be amortized over a five year period at less than one dollar per week. Engineers and contractors are both keenly interested in the use of quality instrumentation for the all important balancing of the air flow in accordance with the design requirements . . . The Anemotherm Air Meter, therefore, is rapidly becoming their most important instrument.

Others who have found important service for the Anemotherm Air Meter are:

1) Personnel managers of plants—for detection of both real and imaginary drafts.
2) School custodians—keeping air handling systems in balance and draftless.
3) Laboratory personnel—those who have to measure air movement and temperature.
4) Transportation, service and design—maintain proper conditions of comfort on aircraft, railroads, ships, buses, etc.
5) Marine Engineers.
6) Manufacturers of air handling equipment.

Typical Installations

Typical Installations

Shipping Information and Weights

AVERAGE SHIPPING WEIGHTS IN POUNDS

	AC				AR-3			C-2			CM-1			E			E-1				HU-3		HU-4			NL-1		W	
SIZE	1	2	3	4	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	4	1	2	1	2	3	1	2	1	2
5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
7.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—
10	—	—	—	—	—	—	—	—	—	—	7	10	13	6	9	12	6	9	12	—	—	—	—	—	—	—	—	4	—
12.5	—	—	—	—	—	—	—	7	10	13	7	10	13	6	9	12	6	9	12	—	—	—	—	—	—	—	—	6	—
15	8	11	—	—	7	12	—	7	10	13	7	10	13	8	11	15	8	11	15	—	—	—	—	—	—	8	—	8	—
17.5	—	—	—	—	—	—	—	—	—	—	—	—	—	8	11	15	8	11	15	—	—	—	—	—	—	—	—	10	—
20	9	13	17	—	10	12	—	9	13	17	9	12	16	12	23	28	13	22	34	54	—	—	—	—	—	16	—	11	—
25	12	22	35	42	14	26	—	16	22	32	16	22	27	18	24	32	18	24	34	54	10	16	14	23	30	19	—	15	—
30	18	32	37	—	18	32	—	18	29	40	17	28	34	22	29	38	18	24	45	—	19	26	17	27	39	27	—	28	56
35	26	34	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	78	110	30	42
37.5	—	—	—	—	37	54	—	28	44	—	29	50	60	—	—	—	28	44	—	—	22	30	24	31	—	—	—	—	—
40	36	52	64	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	90	120	35	47
45	65	110	—	—	40	65	—	80	115	—	32	53	62	—	—	—	80	115	—	—	28	37	27	39	—	—	—	—	—
50	70	120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
52.5	—	—	—	—	80	110	—	80	110	—	95	145	—	—	—	—	—	—	—	—	36		38	49	—	—	—	—	—
60	90	140	—	—	150	—	—	150	—	—	100	150	—	—	—	—	—	—	—	—	75	—	82	105	—	—	—	—	—
75	—	—	—	—	190	—	—	190	—	—	130	185	—	—	—	—	—	—	—	—	110	—	100	160	—	—	—	—	—
95	—	—	—	—	210	—	—	210	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

ADD NET WEIGHT OF ACCESSORIES TO OBTAIN SHIPPING WEIGHT OF COMBINATION.

——— Units above solid line can be shipped via Parcel Post.

– – – – Units below dotted line are crated.

HIGH VELOCITY UNITS

Type	1	Type	1
HP—1	27	HPSL—12″	35
HP—2	47	HPSL—24″	82
HP—3	102	HPSL—36″	89
HP—4	121	HPSL—48″	99
HP—5	155		

GENERAL INFORMATION

1. All units are supplied with a standard sprayed aluminum prime finish. All accessories are supplied with a standard sprayed black finish, except Anti-Smudge Rings which are supplied with a sprayed aluminum prime finish.
2. Anemostat Air Diffusers are manufactured principally of steel parts except Types NL-1, W and W-13 which are made primarily of aluminum parts. All accessories are manufactured of steel, with the exception of the WED for the Type W which is manufactured of aluminum.
3. 15% additional charge for sprayed and air dried colors other than standard.
4. 20% additional charge for all baked finishes (300F or less).
5. 25% additional charge for finish with 3 coats of Amercoat.
6. Additional *net* charge of \$2.00 for cutting of center cones for pendent lighting fixtures. (Indicate diameter)
7. Additional net charge of \$2.00 for each Blank-off Baffle. (Indicate degree)
8. 8% additional charge for export packing.
9. Split Rubber Tubing—3/8″ diameter for use as a gasket around edge of outer cone available in coil form \$.15 net per ft.; installed \$.40 net per ft.

NET WEIGHT OF ANEMOSTAT ACCESSORIES

SIZE	ACED	ED	DE	CU 1 & 2 COMBO	WED
7.5	—	—	—	—	1/16
10	—	1/4	—	1/4	1/8
12.5	—	1/4	—	1/2	1/4
15	1/4	1/2	—	1/2	1/2
17.5	—	—	—	—	1/2
20	3/4	1	—	3/4	1/2
25	1	1 1/2	3/4	1 1/4	3/4
30	1 1/4	1 1/2	—	1 1/2	1
35	1 1/4	2	—	—	1 1/4
37.5	—	2 1/2	—	—	—
40	1 3/4	—	—	—	1 3/4
45	2	3	2 1/4	3 3/4	—
50	2 3/4	—	—	—	—
52.5	—	5	—	9 1/2	—
60	3 3/4	5	—	13	—
75	—	6	4 1/2	—	—
95	—	14	—	—	—

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"No Air Conditioning System Is Better Than Its Air Distribution"

Leadership means integrity, quality, superiority and progress. To maintain leadership you must protect your good name. When Anemostat Air Diffusers are in sight the system is right. This was true yesterday, is true today and will be true tomorrow.

There is only one Anemostat

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